



PLATE O.



FIG. L. SKIN SARCOMA  
OF CHEEK

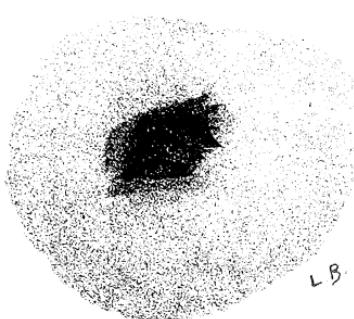


FIG. LII. MELANOTIC  
SARCOMA OF CHEEK

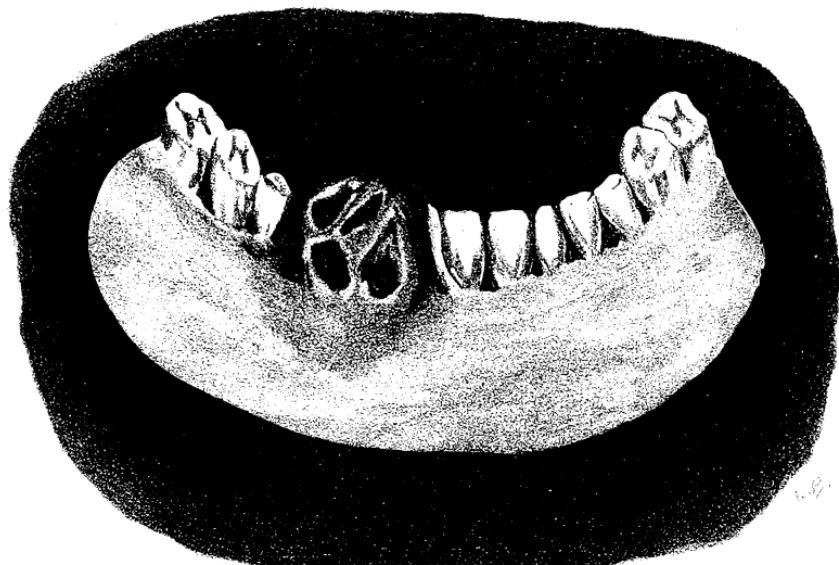


FIG. LI. MYELOID SARCOMA

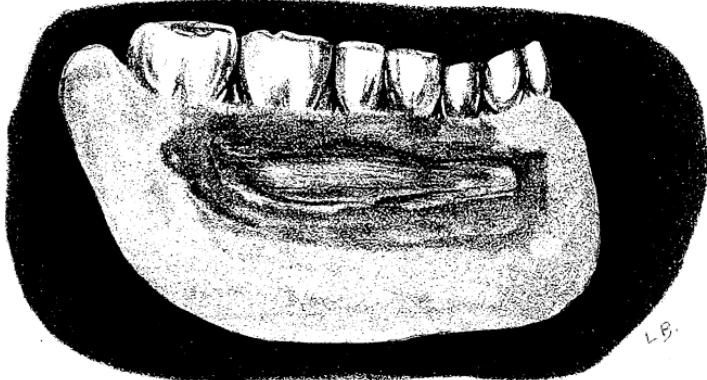


FIG. LIII. NECROSIS OF JAW

PLATE P.

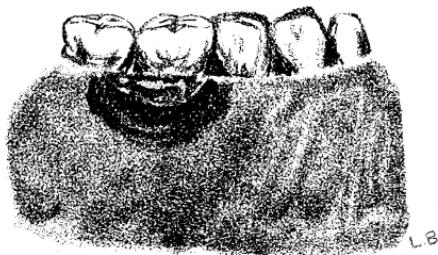


FIG. LIV. SIMPLE CAVIES OF INF. MAXILLARY.

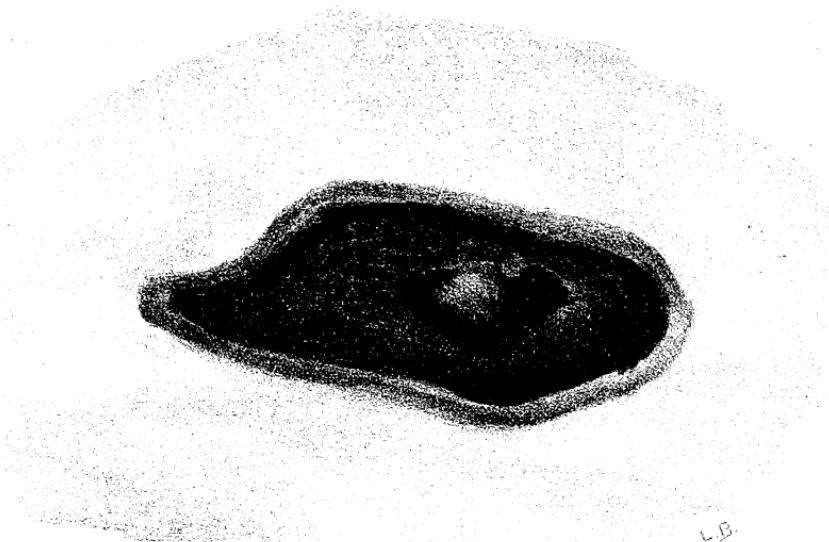


FIG. LV. TUBERCULAR NECROSIS WITH TUBERCULAR  
ULCER OF THE FACE.



# ITEMS OF INTEREST.

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## ORIGINAL COMMUNICATIONS.

### ORAL DISEASES:

### SURGICAL AND NON-SURGICAL.

*By W. F. Rehfuss, D.D.S., and L. Brinkmann, M.D.*

[CONTINUED FROM PAGE 461.]

#### SARCOMA.

The study of sarcoma should be viewed both from a clinical as well as a pathological standpoint.

Pathologically, the varieties and types are numerous; clinically, they are divided into those involving the soft and bony structures.

To arrive at a proper understanding of the origin of sarcoma we must trace its earlier types, and there we find the starting point begins in embryonic tissue; as this form of tissue always has a tendency to advance to a higher type, this may be likewise the case in sarcoma, but always fails. The natures of sarcomatous growths, as a rule, acquire a more succulent field than is found in elderly individuals, and hence its prevalence in those under thirty-five. Children are particularly liable to be attacked with this form of malignant growth, owing to an excess of the embryonic tissue in the economy.

Sarcoma, like cancer, gives metastasis, but its infection is thrown immediately into the general circulation through the sinuses which supply the new growth with blood. Hence, we do not find in sarcoma, as a rule, enlargement of the contiguous glands, as is the rule in cancer where general infection takes place through the medium of its lymph spaces and channels.

Sarcomatous growths often undergo modification during the course of their invasion, either by metamorphosis or by degeneration. The metamorphoses are divided into the fatty, hemorrhagic, hyaline, or myxomatous; the degeneration are formed by the deposit of lime salts (calcification) or chonderification. The former being a most favorable termination in regard to the prolongation of life.

Often after the removal of sarcoma a section will show to the naked eye, patches of yellow or cream color, indicating that the growth has taken on a fatty degenerative process.

Where there is an absorption of the induration in a sarcomatous growth and cavities remain, the embryonic vessel walls give way and hemorrhage follows. This type is known as the hemorrhagic.

The hyaline degeneration takes place around the walls of the blood-vessels, which gives an opalescent appearance to the tissues surrounding them.

Where each individual cell takes on the mucoid change and becomes swollen, it closely resembles myxomatous degeneration, and its differentiation is only possible by a careful microscopic examination.

When foreign substances to the growth, such as lime salts, pigment, etc., infiltrate and occupy it, the tumor takes its character and name from the type of infiltration.

Sarcoma may take its origin from any tissue in the human body. It may arise from bone, fibrous, glandular, or nervous tissue. Some parts of the body are particularly prone to be attacked, viz.: Skin and subcutaneous structure, the eye, lymphatic and salivary glands, the upper jaw. The giant cell sarcomas are limited to the central cavities of bones; glioma and melanotic or pigment sarcoma attacks the eye, though the latter is also found in the skin (Plate O, Figs. L, LI). The tissue from which the tumor takes its origin usually has no special influence on the character of the sarcoma, this rather depending on the form of degeneration or infiltration which takes place. This is not only true of the primary growth, but its influence is also felt in the metastatic deposits.

The growth of a sarcoma is usually rapid, though this is liable to variations, depending on the nature of the sarcoma.

The capsule surrounding this form of growth does not prevent extension by contiguity, as the capsule itself becomes infiltrate, and later the tissues in its immediate neighborhood.

The associated conditions always found in sarcoma make a definite train of symptoms impossible, from the very nature of the various types they may present to the touch, a bony hardness or the sensation of fluctuation found in cysts. Lancinating pain is a constant feature in all growths of this character. There is usually (except in the osteoid variety) multiple growths, rapid growth, a tumor usually of unequal consistency, immobility; absence of inflammatory symptoms may be sufficient to render a

diagnosis, still any or all of these symptoms may be absent and the tumor still be a sarcoma.

Sarcoma attacking the tonsil is, perhaps, the most malignant variety. The general prognosis of sarcoma is uniformly fatal, with the exception of those described as osteo sarcoma, where a limb can be sacrificed, and thus stay the progress, and get well beyond the seat of the disease. This form of tumor usually kills in from four to six months, though it may be removed apparently well beyond the diseased portion, a rapid return is to be expected; in fact, the authors have seen several cases where the patient died three weeks after the removal of a sarcomatous growth from a rapid return, which entirely obstructed both the osophagus and larynx by pressure.

The diagnosis of sarcomatous growths is easy in general, except in those cases where the usual train of symptoms are absent. Here experience and the character of the tumor must be our only guide.

In the osteoid variety, if the pressure has been sufficient to cause absorption of the bone, the characteristic egg-shell crackling will be present, with distortion of the normal contour of the part.

The treatment in all cases of sarcoma should be a thorough removal where feasible.

If the growth has attacked the parotid gland, ligation of the external carotid artery must precede the removal of the sarcoma, as it divides into the internal maxillary and temporal within the substance of the gland; likewise the facial nerve passes through the parotid gland to reach the face. The nerve will be divided during the enucleation of the growth and facial paralysis will follow. This should be explained to the patients, as they often reproach the surgeon after the recovery takes place, for the supposed faulty operation.

In removing the upper jaw for sarcoma of the antrum, this is best accomplished either with an electric saw or with the bone forceps, the greatest difficulty with the operation is experienced in controlling the hemorrhage.

The incision should be made from the angle of the mouth to within a short distance below the inner canthus of the eye, from this point the incision is reflected over the malar prominence and zygomatic arch; the subcutaneous tissues are rapidly divided with a raspatore, and the bony structure removed with the saw or bone forceps. The internal maxillary artery should be immediately grasped and ligated with silk, and the smaller vessels

treated in a like manner ; should there be much general oozing, this can be checked with the actual or Pacquelin cautery ; the parts are then brought together and stitched with silk-worm gut or silk.

If the operation has been performed antiseptically, prompt and early union will take place ; the stitches may be allowed to remain in position for a week or ten days. The mouth should be sprayed with a solution of peroxid of hydrogen, listerin and water, or phenol sodique, every hour or two during the patient's waking hours.

Sarcoma of the tonsil being of such a malignant character, and its removal followed by such prompt return, little hope can be expected from any operative interference ; still, if seen early enough, the removal of the tonsil may be attempted by an external incision.

#### NEURALGIA.

This much misused word is applied so indiscriminately that it is unsafe to use it. It is the most vague term in medical nomenclature, too often a confession of ignorance. Its proper signification is pain arising from change directly affecting some nerve branch, and accompanied by no apparent anatomical cause.

Cases in which there is discoverable cause are better if named by that cause ; that is, stating specifically, neuralgia from thus and so ; and not neuralgia *per se*, as these disorders are generally termed.

Again, in the same direction, we exclude general constitutional causes, such as malaria, anemia and typhoid fever. The neuralgia here is symptomatic, and constitutes disease no more than does pain express the totality of inflammation.

The only type of the disorder claiming consideration in these papers will be that of the fifth cranial nerve.

As to position, disease causing trifacial neuralgia may be located peripherally, that is, the source of irritation may be on any terminal twig of any sensory division of this nerve.

It may be in the course of a nerve fiber or trunk ; effusions, or growths causing pressure; hyperamic changes in the nerve trunk itself; neuritis, or organic. The cause may be central; that is, either at the ganglion of Gasser, or on any part of the nerve filaments which go to make this ganglion. Disturbance in this direction may be as deep as the lower portion of the fourth ventricle, far enough down at times to cause involvement of the cervical nerves also.

Effects and symptoms varying, of course, according to the source of irritation. First, position; next to causes, these are anything and everything, apparently. From an exposed tooth pulp to a tumor of the brain; from a passing vasomotor spasm to the cellular degeneration of a nerve center. A neuritis, a subacute inflammation of a nerve trunk, or the growth of a neuroma in the course of the nerve; an exostosis causing pressure of a trunk; a hypercementosis of some tooth causing pressure on a terminal filament. The effect is, at times, seemingly out of all proportion to the cause. So apparently slight a thing as dental pulpitis may cause functional and nutritive changes in the eye. Strange to say, the functional reaction may be on the second cranial nerve.

Aneurism of the internal carotid artery is announced as cause in a case of Romberg's.

The symptoms are always distressing, at times agonizing. The paroxysmal cases are commonly neuroses. That neuritis is generally an accompanying condition is evident by the "points of tenderness." At points of exit from the bones, at the supra-orbital, infra-orbital and mental foramina, and at many points in the course of a nerve where it is superficial.

Properly, however, we have here only to do with causes in the oral cavity. The most common of these is, by far, irritation or inflammation of a tooth pulp.

The pulp of a tooth is, properly, not its tactile organ; so that irritation of the part may find expression in a reflected pain, and this be anywhere in the course of the trifacial nerve. Lauder Brunton mentions several suggestive and interesting cases in this connection. Similar cases are detailed at length by Prof. Garrison. Every one has observed them. Tomes, Salter, Atkinson, Flagg, Black, all contribute characteristic instances of its occurrence.

It is well to mention here the irritation of the pulp sufficient to cause neuralgia may arise without exposure of the organ.

Most commonly the nerve affected will be another branch of the nerve, which has a terminal irritated; that is, teeth in the superior maxilla will commonly have pain reflected in the course of the superior maxillary nerve. If the irritation be of a lower tooth, the pain is more likely to be felt in some branch of the inferior maxillary nerve. The lower molars most frequently have the reflected sensation along the course of the auriculo-temporal nerve. This, although the rule, is not always the case. Brunton mentions cases of reflection to the pneumogastric nerve.

Paasch long ago recorded a case of laryngeal paroxysm, caused by teething, which disappeared with the dental irritation.

De Witt, in 1868, recorded a case of unilateral amaurosis caused by dental periostitis, which recovered as soon as the periodontal trouble was cured.

Cases of temporary deafness may arise from like causes.

*Diagnosis.*—As in all disorders of doubtful nature, the diagnosis is best made by exclusion. Even then so many possibilities, or probabilities, may exist that failure of therapeutic measures will form additional criteria in the search for cause.

Observation should always be first directed to the teeth and surrounding parts. Unfortunately, many useful teeth are uselessly extracted, without sufficient cause.

An exposed pulp, if deliberately irritated, as by a sudden change of temperature, is found to give rise to a paroxysm, and here is a cause, frequently the only one, or better; treatment, soothing or destroying the organ, brings relief, and we need search no further.

Pressure on some individual tooth may increase the severity of a paroxysm. If there be evidence of inflammation, of course the case is clear. There are cases which have decided reflex from the apical pericementum in apparently sound teeth. These teeth respond to percussion and cause the neuralgic twinges. Hypercementosis is very probable here as a cause. Excluding the teeth as causes, the course of the nerve must be examined for pressures, tumors, exostoses, etc.

After these, search is made for a central cause. This cannot always be determined. Effusions, tumors, etc., may give some indication. Cases in which there are changes in the ganglion, at times may be diagnosed by the greater area and variation of the painful sensation. Again, it is possible at times to determine such cause by certain nutritive changes of the eye of the same side.

*Treatment.*—Of course a paroxysm will demand immediate attention. Try first the milder measures. Locally, counter irritants; at times even to the extent of a blister; cases are recorded which responded only to the thermo cautery. Chloroform liniments are at times useful. More effective will be found ointments of aconitia or veratria. The coal tar derivatives have a great field here. Phenacetin is the most useful of the group. It has not such a depressing effect as antipyrine, and has more pronounced analgesic effect than acetanelin; antikamnia, antilupia, etc., belong to the same class of remedies.

Frequently the administration of two or three five-grain doses of phenacetin will stop the attack. Hypodermic injections of morphia may be necessary; they seem more effective if injected about the painful area.

Tincture gelsemium, tincture aconite are useful at times. These are all tentative measures; preparatory to the true object, removal of the cause. Whatever and wherever this may be, it should be removed, if within the range of possibility.

Despite all efforts to discover a cause, there are many cases at present unexplainable.

These must be treated on general principles. Raise the standard of physical being. Change of climate, that is to mountains; not low altitudes as sea-shore. Open air exercise. Tonics in the shape of the iron preparations. Arsenic is frequently beneficial. Cases which do not respond to these measures must be classed with those requiring surgical interference. In both types, operation may be necessary. How to remove a growth, or any body producing pressure in the course of the effected nerve, or excluding any such manifest cause for the disease, the empirical measure of nerve section or nerve stretching.

Operation on sup. max. nerve.

Operation on inf. max. nerve.

Operation on Gasserian ganglion.

Any one of these may be demanded.

#### NECROSIS OF THE MAXILLAS.

Caries of bone recognized as analagous to ulceration of soft parts, necrosis will be likened to gangrene. One considers molecular death, the other death *en masse*. One having primary cause situated in the focus of the disease action; the other, a cause farther moved, a peripheral disorder (Plate O, Fig. LIII; Plate P, Fig. LIV).

In caries the disease process is associated with an altered cell nutrition; in necrosis, there is loss of nutrition in a definite area. The starved area becoming of the nature of a slough and the process of inflammation following, is the effort to circumscribe and cast out the dead part. As the death of a territory of bone is the disease, we shall look for cause in anything capable of checking nutrition. This is necessarily the occlusion of an artery or arteries.

According to Prof. Garretson's observation, necrosis occurs more frequently in the inferior maxillas than in the superior maxillas, the ratio about four to one. The cause for this will, of course, be found in the differing forms of arterial supply. The inferior

maxilla is supplied by a large artery, enclosed in a canal; the superior maxillæ receive arterial supply through many twigs of an artery surrounded by soft tissues. So many branches are there of this vessel, that one of the superior maxillas has several arterial divisions, and for pathological consideration the difference becomes one of extreme importance. Starvation of an area supplied by one large vessel would be quite readily effected; an area supplied by many small ones would have collateral blood supply sufficient to limit the amount of destruction.

Primary inflammatory action in the majority of cases begins about the teeth. Disease of these organs leading to necrosis as a sequel. The specific poisons are causative agents, syphilis and the exanthemata. It may follow mercurialism; in these cases the cause is usually associated with syphilis. Even should the mercurial impression be of sufficient intensity to produce necrosis, the subject has, as a rule, been the victim of syphilis, and the tissues are weakened, debilitated by that disorder. The exanthemata, which are accompanied at times by alveolar necrosis, are scarlatina, rubeola, and small-pox. All of these are expressions of specific dermatitis; at least manifestations of them are, in part, associated with dermoid tissue change. Embryologically the teeth and their alveoli are tissues of this class; furthermore require a constant and active amount of nourishment. Any disease action tending to interfere with this would, of course, react upon these structures, even to the extent of necrosis. It is very common to find teeth in the process of development affected by the same cause; defective amelification, dentinification, etc. This becomes still more suggestive when it is recognized that the exfoliation in these cases is confined to the alveoli and their contents. The bone proper as a rule does not suffer. Again, the disease is in these cases first recognized by a separation of the alveolar periosteum.

Traumatic necrosis is, of course, a possibility; see cases of sequestra forming after fractures, etc. Another specific type, not now common, is or was the phosphor necrosis. This affected workers in phosphorus, notably those whose occupation was the heading dipping of lucifer matches. Here the primary action was in the teeth; while these organs were healthy the worker remained, at least in this particular, unaffected. Diseased teeth permitted the passage of phosphorus fumes, there to come in contact with unresistant absorbent surfaces. The continued use of phosphorus produces fatty degeneration of tissues; see particularly cases of poisoning by that agent. Evidences of fatty degeneration are everywhere.

Pronounced non-resistance of tissue is a corollary. Not only is there present then a physical condition which would not combat disease, but also a specific poison. In these cases the dental periosteum is first affected. This leading to ostitis. The maxillary periosteum may be either irritated or inflamed to the extent of separation. Entire separation would, of course, explain the formation of an extensive sequestrum. Now this does not always occur, so cause then must be in the other source of blood supply, that derived from the vessels of the interior. Evidently these become occluded, many, perhaps, from fatty degeneration of their coats; or, perhaps, from the pressure of periosteal exudation. In either event, some, perhaps all, of the bone is doomed. How much is involved can only be determined by the loosening of the sequestrum.

In all cases of necrosis, nature does outline a certain territory for exfoliation, and there is no positive method of determining its size before this has occurred. Cases of necrosis may be seen at any stage; at the primary inflammation, while the sequestrum is being outlined; again not till this is at the stage of exit.

The beginning, outside of cases where there is a sudden arrest of blood supply, have a history of periostitis or ostitis.

The periostitis, no matter from what cause, will, if severe enough, cause effusion between the periosteum and the bone; stretch and separate vessels and membrane from the bone. Should there be delay in the escape of this effusion, more or less necrosis results inevitably.

In ostitis, arteries are blocked, and how much damage results depends on the amount of tissue supplied by the obliterated vessels.

Death of bone assured, and there is much effusion, pus, serum, or sero sanguineous fluid. In phosphor necrosis extremely offensive.

These fluids find exit through several fistulæ; opening perhaps in the mouth; again, on the face or into the antrum.

If the case arise from periosteal trouble, this membrane will be found separated from the dead bone. If from ostitis the outer layer of bone may be adherent and thickened. The dead bone may be detected through the fistula. In these cases the inflammation of the periosteum may constitute a constructive process, and instead of death of the lamella of bone we have hyperostosis. The irritation does not pass beyond the grade of a constant stimulation (Plate P, Fig. LV).

*Treatment.*—As we are unable to determine how much of the bone is necrotic till it has been sequestered, it is wise to wait for this, reserving operative measures till we feel the dead parts detached from the living, removing, of course, all unnecessary irritants.

The general measures should be tonic and stimulating; it is an expression of debility in the vast majority of cases constitutional, and needs treatment appropriate to such condition. Iron, quinine, strychnine, cod-liver oil, beef extracts. Plenty of open air, mild exercise, sea baths when possible. All these in view to good results now and after operation. The operation consists in gaining sufficient access and removing the dead part as soon as it is loosened.

#### ABSCESS OF THE ANTRUM.

While not immediately associated with the oral cavity, occasionally anatomical peculiarity may find reason for the extension of disease process from the mouth to the interior of the maxillary sinus. Normally, the apices of the roots of teeth are separated from the floor of the antrum by a layer of periosteum, one of bone, another of periosteum and one of mucous membrane. This is the rule, but not infrequently the roots, or root of some particular tooth may be found extending into the cavity of the antrum and covered by mucous membrane alone. It will be readily seen from this, that alveolar dental abscess of that root would necessarily follow or be coincident with an antral abscess. It will be well in this connection to call attention to certain variations of structure of the antrum. One may possess antra, as single cavities lined throughout by mucous membrane unbroken by projections of underlying bone. Others have projections, bridges, vertical lamina of bone dividing the cavity general into two or more minor chambers. These lamina producing a series of pockets, one of which might be emptied of any fluid contents without removing any of the same effusion from the remaining chambers. Unfortunately there are no external manifestations to demonstrate the existence of such a condition. Since the introduction of the use of the electric mouth mirror, this anomaly may, however, be determined by the opacity remaining, after an apparently thorough drainage. Any of the posterior teeth may be the one having the perforating root. Probably the palatal root of the second molar is the one most commonly found to have such relation. Perhaps no two persons possess antra of the same size. One having its walls represented by a translucent film of bone and extending

from the cuspid to the third molar. Another has the cavity marked by a space, no more than covering the roots of two teeth.

The early stages of antral abscess, in this the most common connection, are those of an alveolar dental abscess. These cases usually receive treatment too promptly to have the condition always recognized. It is only when the pus accumulation has been sufficient to cause dilatation of the cavity of the antrum, escape of pus from one nostril, or the occurrence of very severe constitutional symptoms, that particular attention will be directed to the antrum as the seat of the disease. Probably there are many cases in which there has been discharge of pus into the antrum, having been treated as a simple alveolar abscess, dismissed cured as being an instance of that trouble alone.

The accumulation of fluid is now determined by the opacity demonstrated by the use of the electric mouth mirror. This, however, is anticipating.

A pulless tooth gives evidence of severe pericementitis; soreness, perhaps much oedema of soft parts, decided fever, then rigor with the formation of pus. Now an accumulation of fluid in the cavity of the antrum (see electric mouth mirror), the diagnosis is assured.

This pus may find vent sufficient through a tooth's root; may make a fistula through any of its walls. Again, sufficient may escape into the middle meatus, to prevent engorgement. This fact would at once call attention to the antrum as being the seat of disease; pus, escaping through one nostril, the presence of a dead tooth, teeth or roots on that side, and more or less depression of the floor of the antrum, recognized by an increased fullness of the palatal arch of that side. Prof. Garretson says this swelling is unilateral, not passing beyond the median line.

If there be sufficient accumulation, the external and internal walls of the cavity may be pressed out and thinned. The outer wall will yield slowly to pressure and give a crackling sound.

There may be occlusion of the nostril of the affected sides.

The indication is, of course to find vent. The place of this will be at the affected tooth. The antrum may be trephined to accomplish the end by extracting the offending tooth, and secure by that means drainage and a canal for the injection of medicaments.

First wash out the cavity with a dilute solution of peroxid of hydrogen, till effervesence ceases and the solution comes away clear; follow this by a warm alkaline antiseptic solution, anything bland, unirritating. Keep the canal open by a tent, or a canula

in a small plate. This fastened to the adjoining teeth, and kept in position till there is a return to normality in the diseased structures of the antrum. When this end has been attained the edges of the wound may be freshened ; it heals by granulation.

#### CARIES OF THE MAXILLE.

Etymologically this condition is rottenness of the bone ; pathologically, it is ulceration in the osseous tissue. The inflammatory action is more common in bones having much cancellated tissue, and in areas having several arterial twigs to supply them.

It may arise from any cause capable of inducing an ostitis. The systemic poisons—syphilis, overuse of mercury, tuberculosis, rheumatism, the exanthemata, etc.—may all produce the disease. Most commonly, however, it is the sequel of a dental periostitis. The form arising from syphilis begins as a periostitis, affecting generally the palatal processes of the maxillæ, this leads to a destructive ostitis, the indication of which is caries, causing perforation of these plates. The process in syphilitic cases is essentially destructive from its first manifestations. That from mercury may be checked at almost any stage.

Cases have been recorded where rheumatic periostitis has been followed by extensive caries. Necrosis is more common than caries in connection with the exanthemata. The tubercular diathesis, or predisposition, may offer a fit soil for the flourishing of colonies of the bacillus tuberculosis, and the growth of tissues.

As before mentioned, dental periostitis takes first rank as a cause of this disease. The area of inflammation becomes the seat of a cell proliferation, resulting in the molecular destruction of the osseous matter. These cells remain in a condition but little, if any, removed from the embryonic. The nutritive balance between the cells and the formed bone is so disturbed that the bone proper is deprived of its nutrition ; the death of the osseous particles leaves them as continuous irritants, tending to keep up the inflammatory action. The process tends to indefinite continuation, not because of any distinctive peculiarity of the disease *per se*, but from the common association with constitutional vice of some kind. This underlying predisposition may be anything tending to lower the bodily vigor ; anything from anemia to syphilis. When dyscrasia is absent ; the caries may be very limited, but little more than necessary to produce a fistula. The processes almost invariably commences in cancellous bone.

The plates of dense bone overlying the cancellated structure

may be unaffected for some time. Their nutrition has not the same grade of non-nutritional action directed against it.

The symptoms are those of an ostitis, they may vary in severity from an apparently mild inflammation to those of the most decided type. The milder symptoms frequently associated with pronounced systemic poison as syphilis, tuberculosis.

Diagnosis is by touch and the appearance of the small sequestra. A moderately sharp instrument will demonstrate the change of structure; in place of firm, elastic bone we find a spongy, softened condition, which permits the passage of an instrument without much force. Pieces of this bone brought away are discolored, gray or perhaps black, and show distinct evidence of fatty degenerations. With but little external evidence of such condition there may be found extensive involvement of the interior of the bone.

The prognosis varies as to the cause. Without constitutional taint recovery is prompt. Syphilitic cases in many instances appear to have the process self limited. Tuberculosis, and the case may last indefinitely, at least it will be very tedious.

*Treatment.*—Remove all causes. More than one operation is generally necessary; that is, unless the operative surgical means be so thorough as to leave no trace of necrotic tissue. Attend to all constitutional disturbances. Syphilis will, of course, require specific treatment, mercurials or more often the iodides.

Tonics are generally necessary. Iron, quinine, strychnine, particularly the iron. Generous diet and cod-liver oil. Koumyss, beef peptonoids, all means to raise the standard of physical condition. Till this is done, operative measures have the possibility of prompt success reduced.

The operation consists in removing enough overlying tissue to gain full access to the disease area. A simple cut, one or two flaps will be sufficient. Then scrape out all dead tissue with appropriate scoops, or better, bur out all the dead and dying bone, till the parieties of the cavity formed are lined with healthy bone. Sight and touch will demonstrate when this point has been reached.

In lieu of the former operation the acid treatment may be used. But a small opening is required, large enough to remove all the tissue, readily taken away with a half sharp spoon excavator. Then apply by an appropriate carrier, aromatic sulphuric acid, dilute one-half or even full strength. The application may be made with a tampon of cotton and repeated as often as necessary. The acid, removing chemically the dead, inorganic bone and acting as a stimulant to the sluggishly nourished tissues.

[TO BE CONTINUED.]

## WORLD'S COLUMBIAN DENTAL CONGRESS.

Reported for ITEMS OF INTEREST by Mrs. J. M. Walker.

## GENERAL SESSION, SECOND DAY.

The paper selected for reading before the entire Congress, at the General Session, Tuesday, August 15th, was entitled

## CONGENITAL DEFECTS OF THE ENAMEL,

by Dr. Otto Zsigmondy, Vienna, Austria. The paper was illustrated by charts, models, and specimens of teeth affected by the conditions known as "erosion," "atrophy," "pits," "wavy enamel," "honeycombed," etc., for all of which conditions of defective development the author suggests the general term "hypoplasia" of the enamel.

The various forms of defective enamel development were very minutely described by the essayist. Attention was directed to the not generally recognized fact that calcification in the upper jaw proceeds as follows:

1st. The central incisor.

2d. Cuspid.

3d. Lateral incisor, with the remark that this noteworthy circumstance, as yet inadequately studied, determines why we find the lateral incisor developed almost normally, while defects are apparent in the enamel of other teeth of the upper jaw. The first molar is but rarely the seat of typical defects, the second molar still more rarely, and no instance of such defect has ever been observed in the two last molars. Some writers maintain that the milk teeth never exhibit typical defects. This, however, is a mistake. Temporary teeth are occasionally observed which resemble permanent cuspids and molars in defects of the enamel, and whose internal structure also show the discontinuous lines which are characteristic of the teeth in question.

The cause of these conditions of enamel structure is to be found in general diseases of the organism, whose effect as regards the other tissues of the body has vanished, while its influence has become permanent in the teeth.

Rachitis, scrofulosis, syphilis, the exanthemata, convulsions, meningitis, grave attacks of suffocation as, for example, from whooping-cough in early life, have been the alleged causes of the disturbances to the normal development of the teeth in their follicles. In view of the literature dealing with the subject, it is rather astonishing that the microscopic examinations of teeth so affected should have been almost entirely neglected, as this must form the basis

for the solution of the question of the cause of the deformities. A point of capital importance is the evidence that the disturbance in development can also be observed in the dentine. The latter is not uniformly calcified in all its parts. We observe in sections at points corresponding to the fundamental strata, well-marked lines which consist of interglobular spaces arranged in rows, sections of strata in which incomplete calcification has taken place.

The paper was discussed by Drs. J. J. R. Patrick, G. V. Black, L. L. Davis, and George Cunningham (England).

Dr. Cunningham suggested the term, "coronal hyperplasia," as giving wider scope, the dentine being affected as well as the enamel, a name appealing to the whole structure being desirable. The paper was referred to Section II for further discussion.

At the General Session of Wednesday, August 16th, the Secretary read a paper entitled,

CONCERNING VARIOUS METHODS ADVOCATED FOR OBLITERATING THE NECESSITY OF EXTRACTING DEVITALIZED TOOTH PULPS,

by Dr. W. D. Miller, Berlin, Germany.

Dr. Miller spoke of the well-known difficulties of cleansing and filling the root canals of molars and bicuspids; described the methods presented by Witzel, Baume, Herbst and Bodecker for obviating this condition, and then gave his own method of preventing the decomposition of the devitilized contents of root canals by impregnating them with suitable antiseptics—the result of over five hundred experiments in this direction.

Of the following formulas.

1. Sublimate.....	0.01 gram.
Boracic acid.....	0.02 gram.
and 1	
2. Sublimate.....	0.01 gram.
Common salt.....	0.02 gram.

were abandoned, because of severe pain the day following the application.

By using

3. Sublimate.....	0.0075 gram.
Thymol.....	0.0075 gram.

the thymol prevents the sublimate from being too rapidly absorbed, and pain seldom follows its use.

4. Sublimate.....	0.005 gram.
Thymol.....	0.005 gram.
Tannin.....	0.005 gram.

does not penetrate as No. 2, and the tooth is discolored.

5. Cyanid of mercury.....	0.075 gram.
Thymol.....	0.0075 gram.

and

6. Salicylate of mercury.....	0.0075 gram.
Thymol.....	0.0075 gram.

from the sparing solubility of these salts of mercury, will probably prove more durable than the sublimate solutions.

The best results have been obtained from diapeturin (oxichinasepte) applied in pure form.

Of the liquid antiseptics, oil of cinnamon has great conservative power, but is difficult to apply and discolors the tooth.

The "Sublimate and Thymol" preparation (No. 3) has been employed by Dr. Miller in over two hundred cases at the Dental Institute of the University of Berlin, with only one known failure.

In experiments of this kind he wisely cautions that only such cases should be selected as would otherwise, as a rule, be sacrificed to the forceps or allowed to crumble away. Not more than one or two cases in a mouth, in private practice, should be risked by the careful dentist.

In the discussion of this subject Dr. Frank Abbott said that he never devitalized a tooth-pulp, except where he found it impossible to stop pain. He has not used arsenic more than three or four times in the last fifteen years. If the pulps die, they die of their own accord. He said: I have many dead teeth to handle and many to treat in my practice, as everyone has who is in full practice, and I treat them all in one general way. That way is to open the pulp-chamber as carefully as I can, so that I may cleanse it thoroughly of every particle and get thoroughly into all the root canals. I then, with a fine gold-pointed syringe, use a 1 in 10,000 solution of bichlorid of mercury—a grain of bichlorid of mercury in 20 ounces of water—and syringe out these canals just as thoroughly as I can; I then, with a broach or small instrument, penetrate into the canals as far as I can go, stir up the contents, and then wash again, repeating this till I am pretty sure everything is clean, so that the substance coming out of the tooth as it strikes a white napkin will show a white, clean color instead of staining as when the canal is filled with dead material. When it is washed thoroughly clean I fill with oxichlorid of zinc, in which I put a drop of a solution of 1 in 2,000 of bichlorid of mercury, thus combining the antiseptic properties of the bichlorid of mercury and the penetrating and antiseptic properties of the chlorid of zinc and oxid of zinc.

This is the material that mummifies or holds this substance that is left in the roots of the teeth, leaving it in a condition to give no trouble; and it may astonish some of you to know that instead of opening a tooth and treating it day after day for a week or more, I open a tooth and fill it at the same sitting always, unless I have periosteal irritation,—soreness of the tooth as I touch it. The crown of the tooth is filled with gold or any substance that I choose to use, of course, and I dismiss the patient after painting the gums carefully over with a solution of concentrated tincture of aconit root and tincture of iodin. That I always do before my patient leaves the chair. It is a powerful counter-irritant, and does the work of relieving the pressure around the root of the tooth. This to me is the simplest, easiest, and most quiet way of getting along with that kind of teeth.

Dr. Geo. Cunningham (England) said that he had tried the Herbst system of hermetic sealing and his so-called "cobalt," but could not endorse it. He had submitted the "cobalt" sent to him by Dr. Herbst to an eminent chemist, who, after examining it, said: "In that bottle you have enough arsenic to kill the whole British nation." Prof. Miller delivered an introductory course of lectures on operative dentistry, and showed these experiments. I have used his method in wisdom teeth. Of course, the alternative treatment is the forceps. If we can find for poor people some means which would shorten the treatment, I believe it will be the practice as used by Dr. Abbott, which will give the opportunity to fill at one sitting. I think the paper we have had to-day is of very great importance, because it has pointed out one way that we can bring our operations within the reach of larger numbers of the community.

Dr. Schreier (Vienna) said that the antiseptic for the purpose described should be one which is readily introduced into the root canal, and whose effect is prompt and immediate. He did not think those given by Dr. Miller filled these conditions. He had a paper to be presented to the Congress on the use of Kalium Natrium (potassium sodium) for this purpose, which would be read later.

The paper was then referred to Section II, "Etiology, Pathology, and Bacteriology," for further discussion.

At the General Session of Thursday, August 17th, Dr. J. M. Whitney (Honolulu) read a paper entitled

AMONG THE ANCIENT HAWAIIANS,

illustrated by a large collection of crania, maxille, etc.

Dr. Whitney said that in view of the ravages of caries and other oral diseases to-day, such questions as these naturally arise: Is this a necessary evil to which all mankind is subject? or is it a result of the artificial life and varied foods to which our modern civilization binds us? Is dental irregularity due, as some claim, to the mixture of races, and if we could find a people homogeneous and simple, would these conditions exist? Is it true that as mankind advances in the stage of being, the third molar is to become gradually eliminated? What is the normal position of adjacent teeth in relation to each other? What relation has the kind of food we use to the building up of dental structure? He considered that much light might be shed on these questions by the study of the crania of such a people as the native Hawaiians, who, till within a hundred years, lived isolated and unknown to the great world, therefore their habits were simple and their wants and opportunities few, and whose modes of burial were such that it is possible with comparative ease to obtain some knowledge of their primitive conditions.

Dr. Whitney then sketched briefly the history of these islands and the mode of living, diet, burial customs, etc., of the ancient people. Of those buried in the sands of the sea-shore very little now remains of the thousands of human beings whose bones once lay bleaching under the tropical sun. The natives have broken and demolished the skulls, jealous of their removal, while the South Sea Islanders have removed the teeth for their barbaric necklaces. But fortunately for the modern scientific investigator, the superstitions of the more ancient Hawaiians led them to deposit their dead in the most remote and inaccessible places, such as the old lava caves, where no wind or moisture ever penetrates, the remains being still as perfectly preserved as in our modern cabinets. These ancient sepulchers are guarded with most jealous care, and it is very difficult to obtain access to them. Dr. Whitney gave a most interesting account of the difficulties encountered in his finally successful search for one of these ancient caves, whence he returned with well-filled bags of the crania of this most primitive people.

As the result of his examination of these numerous specimens he says: I am convinced that both in the case of those buried in the caves, and of those more recent in the sand, not more than twenty-five per cent. have been free from caries, irregularity, or disease. Indeed, I think I have discovered every form of dental disease known to our practice; dental caries in all its many types, necrosis

of the teeth, erosion, alveolar abscess, pyorrhea alveolaris, disease of the antrum of Highmore, necrosis of the maxillary, ankylosis of the jaw, salivary calculus, etc.

Perhaps next to dental caries, the greatest source of oral disorders among these people was the irregularity of the third molar, often producing in them as serious consequences as with us of the present time; while its failure to erupt was nearly or quite as common as we find it in our daily practice. So that we cannot argue from these remains, at least, that the coming man is to be deprived of this useful organ.

The children of the natives of the present generation, as shown by actual examination, have but little better teeth than their white school-fellows. Their fathers and mothers may have better teeth than the children, but it would be an exception if they had not been to the government physician and had one or more teeth removed for relief from odontalgia, while the grandparents, the old men and women whom I found when I first went to the islands, had teeth proximating those found in the old caves, though not as good.

I lay much of this great change to the many forms of disease that have weakened their constitutions, to fine flour that has become a part of their diet, and, eaten in the form of crackers or hard bread, clings to the teeth; to the many acid fruits, such as tamarinds, guavas, limes, etc., to which they have constant access, and to spending their childhood and youth in the school-room instead of wading and swimming in the warm sea; eating raw fish and shell-fish which they have caught, chewing sugar-cane, and stripping off with their teeth the fibrous covering of the cocoanut.

Dr. Whitney stated after reading his paper that he had many specimens of crania in which the third molar was not erupted, and he had found that it was as frequent among the ancient Hawaiians not to erupt that tooth as among his present patients.

In the discussion of this paper Dr. Peirce (Philadelphia) called attention to the width and large ramus of the jaw, far exceeding that of the modern jaw, and yet, with all this space and weight, the third molar entirely lacking; also to the tendency in ancient skulls of a secondary development of the process, replacing in a measure lost teeth—in one case a sharp incisive process where the upper bicuspid, cuspid and molar had been lost, the lower jaw retaining the teeth.

Dr. Hayhurst, of New Jersey, then read a brief abstract of the

## HISTORY OF DENTISTRY IN THE UNITED STATES,

in preparation for the volume of Transactions, compiled by him from material gathered by Committees No. 8 and No. 18.

By special vote, one of the veterans in dentistry, Dr. Corydon Palmer, addressed the Congress for a few moments. In concluding, he said :

I have three ideas I wish to speak of.

1st. I would urge you not to practice the extraction of the deciduous teeth in children. It is cruel. It produces irregularity and deformity in future life.

2d. Be careful not to overtak young patients, girls, and nervous persons. Don't keep them in the chair too long. I have seen nervous forces and temperaments destroyed by it.

3d. As to the use of arsenic. I began to use it in 1839, and use it as you will, it is still arsenic. It belongs down below, and if you use it you will have a nightmare that will follow you to eternity.

The President then made a number of announcements relating to the Congress, after which the meeting adjourned to meet Friday, August 18th, at 12 M.

## GENERAL SESSION, Friday, August 18th.

The Secretary, Dr. A. O. Hunt, read a paper by Dr. John Girdwood (Edinburg), entitled

## ENGLISH TUBE TEETH; THEIR USE IN PLATE, CROWN AND BRIDGE-WORK.

The essayist expressed surprise at the absence of any detailed description of these teeth in American works, as they are largely used in England, and found superior to flat teeth in many points where their use is indicated. Their points of superiority lie in the facts :

1st. That they are much stronger than flat teeth, especially for service as masticators, being supported under the whole lower surface.

2d. In easy removal for repairs.

3d. In requiring no backing, thus eliminating the danger of warping the piece.

4th. In being of the same texture throughout so that they can be ground down wherever this is required and polished perfectly.

5th. Their cheapness, owing to their ease of adaptability.

6th. They are a faithful reproduction of the forms of the natural teeth, and, consequently, comfortable to the tongue.

7th. Being all porcelain they are easily kept clean.

8th. Having no backings they retain their translucency when mounted for wear.

The writer described at length the tools required, and the process of mounting these teeth, as single crowns, with or without caps or bands for bridge-work, fixed or removable, etc. In the use of these teeth the pins are cemented in the teeth with molten sulfur, broken teeth being readily removed by the application of a moderate degree of heat. In conclusion, the essayist asked, "What more can an operator wish, when he has presented to him for use a tooth differing essentially from the natural one in but one respect—that it does not live? What more does the patient demand than that having his dental apparatus restored as far as utility is concerned, he is at liberty to laugh and chat to his heart's content, without betraying the fact that he owes his perfect comfort to art? It is no exaggeration to say that in the use of the tube tooth such a happy state of things is realized."

This paper was referred to Section VII for discussion.

Dr. Thos. Fillebrown (Boston), next read a paper, entitled

#### HYPNOTIC SUGGESTIONS AS A DENTAL OBTUNDENT AND SEDATIVE.

Dr. Fillebrown referred to the contrast between the action of the British Medical Association, six years ago, when a paper on this subject was refused a hearing, and a statement in the *British Medical Journal* a year ago, that "Hypnotism has come to stay; it is deserving the attention of every thoughtful scientific man." Last year a paper presented before the American Medical Association on this subject was ruled out, while to-day the subject is chosen by the World's Columbian Dental Congress as the one most likely to interest the largest number of persons, the very large attendance justifying that choice.

The paper was largely a record of cases of the successful application of the principles of hypnotic suggestion, more especially as an obtundent for painfully sensitive dentine, the patient being fully conscious of all that was going on, and fully realizing the obtunding effect of the suggestion; also, in relieving the dread and terror of dental operations so often a great hindrance to successful operation—its sedative influence on the nervous system, the patient resting during the operation, instead of being exhausted. The essayist recommends the careful study of "Bernheim's Suggestive Therapeutics" to all who are interested in the subject.

FINAL GENERAL SESSION, Saturday, August 19th.

No papers were read at this general session of the Con-

gress. The reports of the Committees on "The History of Dental Legislation in this and Other Countries;" "On the Care of the Teeth of the Poor," and a communication from Dr. Viau, of Paris, on "The Dental Uses of Cocain," were read by title, and will appear in full in the volume of Transactions.

WHAT RELATION SHALL DENTISTRY HOLD TO MEDICINE, was briefly discussed by Drs. J. D. Patterson, J. Y. Crawford, Fletcher, of St. Louis, and passed.

The Committee on Prize Essays presented their report, awarding to Dr. George Cunningham (England), the prize offered for the best essay on "Oral Hygiene," and the prize medal was pinned on the lapel of Dr. Cunningham's coat by Dr. Shepard, amid great applause.

Dr. Godon, of France, and Dr. Aguilar, of Spain, expressed the appreciation of the different foreign representatives for courtesies received.

The total registration was announced as 1,115—999 American and 116 foreign dentists.

Dr. J. Taft addressed the meeting as the representative of the Executive Committee.

Dr. Shepard briefly recounted the labors of each of the committees, and expressed his appreciation of their faithful and unselfish discharge of their duties, through which the Congress had been made such an unparalleled success, concluding his address by saying: "There is nothing now for me to do but, by the authority conferred on me, to declare this World's Columbian Dental Congress adjourned *sine die*."

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Dr. C. W. Strainton says: Let us not make the mistake of supposing that the eight-tenth who do not attend regularly our dental meetings are Ishmaelites,—men of ignorance, without character either as men or practitioners. Most of them are men of most excellent character, and thoroughly conscientious in their operations. They have never realized the benefits to be derived from attending dental meetings. Many of them have a firm impression that such gatherings are in the interest of dealers in dental goods; others that they are chiefly for the purpose of gratifying the ambition or booming the reputation of ambitious men. In short, misunderstandings and misconceptions, which we all have of things with which we are not familiar, are dominant with this class.

## THREE NEW REMEDIAL PREPARATIONS.

*Dr. W. E. Walker, in the Mississippi Association.\**

Dr. Walker treated of the claims of pyrozone, Weld's syrup of iron chlorid, and the iron bi-palatinoids, with a brief abstract of the published observations of Drs. Ottolengui, Boedecker, Chas. B. Atkinson, M. L. Rhein and others, all of which was confirmed by his own experience. Dr. Walker spoke of the extreme unreliability of peroxid of hydrogen from its lack of stability. In the three grades of pyrozone, (1) medicinal, (2) antiseptic, (3) caustic, we are offered what claims to be reliable, stable preparations of oxygen in solution, of exact strength, which, in the grade indicated by conditions, will be found valuable (1) in the diagnosis of pus; (2) in the treatment of ulcerations, dental abscesses, pyorrhea alveolaris, necrosis; (3) in bleaching teeth; (4) as a cleanser; (5) as a disinfectant; (6) as a hamostatic, or (7) as a caustic application.

Medicinal pyrozone is a 3 per cent, or fifteen volume aqueous solution  $H_2O_2$ ; antiseptic pyrozone is a 5 per cent solution  $H_2O_2$  in ether; caustic pyrozone is a 25 per cent etherial solution.

Medicinal pyrozone has about the same range of application as peroxid of hydrogen but with the advantages of stability and exact strength. It claims are that of being a rapidly acting, non-toxic, non-acid, odorless antiseptic and pus-destroyer.

Dr. M. L. Rhein says: "It does not seem to lose its stability after any length of time."

Antiseptic pyrozone acts on pus with great energy, the rapid evaporation of ether leaving the concentrated  $H_2O_2$  behind. An apparent coagulation follows contact with soft tissues, but there is no permanent change of tissue; the natural color soon returns with no eschar or slough. It is very valuable for spraying cavities when ready for filling, sterilizing and drying the cavity at the same time. Great care must be taken, however, to avoid exposed pulps, because of the expansion of tissue.

The caustic pyrozone is pronounced by Dr. Chas. B. Atkinson to be "probably the best bleacher of teeth that has ever been offered \* \* \* its effects are exceedingly prompt and the results permanent." In deep pockets of pyorrhea alveolaris a small tent with 25 per cent will, in most cases, terminate the suppuration.

Tannin and glycerin promptly relieve the pain and burning consequent on accidental contact with healthy soft tissues, which is more severe than on diseased tissue.

\*Reported by Mrs. J. M. Walker.

As a pus indicator, it must be borne in mind that effervescence and froth follow contact with all extramorous organic matter, whether pus or a flow of venous blood. Pyrozone then is an absolute indicator of pus, only after the territory has first been bathed and rinsed, and made clean.

In Weld's syrup of iron chlorid it is claimed that the disastrous effects of the tincture on the teeth have been practically overcome, the free acid being neutralized, while the therapeutic value remains unimpaired.

In the bi-palatinoids, the agents to be combined are contained in the two halves of a double-convex capsule, but kept apart by a soluble air-tight partition till the capsule is dissolved in the stomach, when chemical or molecular reaction takes place. In the ferrous carbonate bi-palatinoid, for instance, one grain pure desiccated powdered sulphate of iron and two grains carbonate of soda are enclosed each in an air-tight compartment of the double or twin capsule. When the latter is dissolved in the stomach, molecular reaction takes place, and without the formation of any inert substance the green ferrous carbonate results—the chemical form of iron most easily absorbed by the system.

Dr. C. B. Atkinson considers this method of administering iron tonics far superior to any liquid preparation.

#### DISCUSSION.

In the discussion of this paper, Dr. W. H. Morgan said that he had never been able to obtain the results claimed by others for peroxid of hydrogen. He believed that both in that and in pyrozone—though he had not used the latter—the effervescence resulting from the use was due solely to sulfuric acid contained in these preparations. If pyrozone removes the discoloration of dentine, pyrozone will be very valuable, as, by its power of penetration, it will reach the débris in the tubuli.

It is a mistake to claim that it is a destroyer of bacterial life. Prof. Miller, of Berlin, has proven that nothing yet known has that power. Carbolic acid is the most effective agent in that direction, as it is an active coagulant, preventing decomposition through that power. Dr. Morgan said the paper was worthy attention, and deserves a place in our literature; that some day he hoped to see it in print and give it investigation and study.

Dr. W. T. Martin spoke of the properties of sodium peroxid as recently set forth by Dr. C. C. Kirk.

Dr. Fr. Peabody said that he did not believe that peroxid of hydrogen ever destroys pus. It is neither a disinfectant nor a

germicide. While there is no medicine that will kill the spores or ova of bacteria, they must be hatched before they can be killed, and while there is nothing that can be applied in the human system that will destroy them, yet outside of that boiling water cooks the germ and effectually disposes of it.

He had received from Parke, Davis & Co., a sample bottle of Weld's syrup of iron chlorid, and had read the accompanying literature with care and interest. He had filled a small bottle with half-and-half chlorid of iron (Weld's syrup?) and water, and placed it in a perfect bicuspid tooth. A cloudy precipitate formed, but there was no decalcification of the enamel. He then placed another tooth in a bottle of full strength. At the end of 12 hours there was such a heavy cloudiness that the tooth could not be seen in the fluid, and the enamel was much roughened. At the end of 24 hours more the enamel at the gingival margin had disappeared. At the end of another 24 hours the enamel was off in spots on the buccal and lingual surfaces. When chlorid of iron is ordered by the physician, it is not sufficient to take it through a tube, but the mouth and teeth should be well rinsed with an alkaline wash, to neutralize the hydrochloric acid and prevent its injurious effects on the teeth. Dr. Peabody spoke of the iodoform vaporizer, corroborating all that he said of its merits before this Association, and at Lookout and Niagara last year.

Dr. Morgan thought the ordinary tincture of iodine would have the same beneficial effects, penetrating the dentine quite as effectually, without the very offensive odor of iodoform.

Dr. T. C. West asked why the crystals of iodine placed in the cavity would not produce the same effect.

Dr. J. B. Askew said that he had not had the opportunities for investigating and testing new remedies, enjoyed by college professors in their laboratories, but he had never deserted his "first love," carbolic acid.

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INSTANT PHOTOGRAPHY IN DENTISTRY.—A dentist in Germany uses his knowledge of amateur photography with great success, as applied in his practice. He takes two impressions of the patient's mouth, one with closed lips and the other with open ones. In this way he gets an invaluable help for the execution of his work, as he can thus always know the length of the lips, the distance of the mouth corners, the direction of the mouth opening, and, by the second impression, he can nicely control articulation.

## SOME PRACTICAL ITEMS.

*By Dr. Geo. S. Allan, of New York.*

I have used with much satisfaction a celluloid sheet instead of a towel or oil-cloth for the top of my table and my bracket. It is absolutely clean, is wiped off without the slightest difficulty, and it seems to meet all the requirements for a covering of that kind. The greatest objection to it is that if you happen to let a match fall on it, it will burn very rapidly. It will warp a little if the sun shines on it, but practically it has no serious objection, and I would not be without it. It is cheap and economical, and a sheet will last two or three years. If you let sulphate of iron or iodin fall on it, it will, of course, stain; but for neatness and cleanliness I know of nothing that is its equal. I think enough to cover a bracket would cost about sixty or seventy cents. It comes by the yard or by the sheet, in all sizes, shapes and colors. You can get it at the Celluloid Company in Newark; they have an office in New York.

The next little appliance is a pair of pincers for solderings. Take the ordinary pincers and hold a piece of gold over a Bunsen burner, and, unless you are very quick, your fingers will get very hot and you must drop it. I had a pair of pincers made with each of the points set in a little box of asbestos. I find it very valuable and satisfactory. You can leave it in the burner as long as you please, and the heat will not affect it; it is a good thing both in the office and in the laboratory.

To heat gutta-percha, make a little oven of soapstone. When in use, you light the spirit-lamp and place it under the end of the stone; at the same time the instruments to be used are passed through the opening at the end of the oven, over a wire loop, a wire netting inside, to the flame of the lamp, so that the instruments to be used and the gutta-percha will be warming at the same time. The slab is hollowed out, so that the small pieces of gutta-percha will not roll off. The stone heats gradually, and the amount of heat required can be regulated to a nicety by the size of the flame on the portion of the stone the gutta-percha is placed on. A piece of mica on the side enables you to see the flame and tell where you place your points, and get them as near the flame as you desire. The mica also prevents the flame from blowing out, if you are working in summer with the doors open and are in a draught. There is no danger of overheating the gutta-percha, and I find dry heat better than wet.

About two years ago I exposed a pulp, capped it, protected it, and, as the crown was decayed, I put a Richmond crown on. The tooth broke about a month ago, and in my haste in getting the root ready, I chipped out the little piece of oxiphosphate that I had placed over my capping, and re-exposed the pulp. If I had referred to my book I would have noticed at once that the pulp had been capped, and yet there was not the slightest indication about the tooth that it had been done; it seemed to me that some method ought to be adopted by which we could tell the condition of things. There is no better way than by having the material itself tell the story. In other words, I would have my gutta-percha or oxiphosphate, whatever I used, a bright red color. If that were generally practiced, no dentist would ever commit the piece of folly that I did, of needlessly re-exposing a pulp that had once been exposed by cutting away the cover. By mixing a little vermillion with the gutta-percha or oxiphosphate you get a perfectly red filling-material. This I now use immediately over the cap covering the exposed pulp. A tooth so treated tells its own story, and the danger of re-exposing a pulp once exposed, treated and protected, will be reduced to a minimum. In excavating, if this plan should be generally adopted, the moment one sees that red signal he knows there was an exposed pulp, whether he had done the work himself or some one else had. I added some of the vermillion with the oxiphosphate powder, and found that it did not interfere with the setting when mixed with the acid. I do not see why that should not be a useful point in practice.

A year or two ago I commenced practicing with diamond powder for polishing enamel, and for a variety of purposes. I use a very little of it mixed with Hindostan powder, and find it very effective. I use it with a copper point, or take an old bur, heat it and soften it, and take off the bur part so I have simply a rounded part, dip it in oil of cloves or oil of wintergreen and use it, and it is astonishing how rapidly it works, and what a bright, clean surface it gives. In reference to the Hindostan powder, when the engine was first introduced it was a question what kind of stones would be most useful for polishing. When I was at college I spent a great deal of time grinding some lenses, and I found that R. B. Tolles, who was then one of the best manufacturers of microscope objectives we had, used Hindostan stone for grinding and polishing his lenses. I met him afterwards, and, in speaking of it he said it was one of the most valuable powders he had ever used. The ordinary Hindostan powder will scratch, but you can have two

or three grades by precipitation, and the finer ones will cut and polish without scratching. It is of no small moment to finish off a filling or roughened tooth-surface without scratching. I believe these different grades of Hindostan powder are the best powders in the market for dental use.

To disinfect a root, the cavity and roots under treatment are dried out thoroughly, the rubber-dam being first placed over the tooth by the use of bibulous paper and the hot-air syringe. Then the root or roots are cleansed out as thoroughly as possible, using cotton wrapped on broaches, etc. The drying process by these means can be made to extend well up in the roots. A fine platinum wire heated and passed well in the roots is very effective at times, but for the completion of the drying process I depend on alcohol (absolute is the best), which, by its strong affinity for water, will run into the roots, work its way up, and displace the water. By means of broaches passed in the roots, or a wad of cotton pressed over their open ends, this process can be expedited. The alcohol is not only a powerful germicide itself, but is also a solvent for most of the essential oils, so that the oil will follow the alcohol and be made to take the place of the water or watery mixture originally filling the roots. Chemical affinity also acts powerfully, first in putting the alcohol in the roots, and finally the oil; and we have reason to believe that this last force even takes the alcohol and oil into the dental tubes. In the case of celluloid dissolved in alcohol and ether, used to fill the roots, the same procedure is followed, except that in between the alcohol and the solution of collodion a mixture of two parts of ether and one of alcohol is employed. The collodion mixture is miscible in all proportions with this last, but not at all with alcohol.

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#### CHEMISTRY.\*

Dr. George B. Clement explained, in the Mississippi Association, some of the elementary principles of chemistry within the grasp of the younger members of the Association. The certainty of results, under given conditions, make chemistry one of the positive sciences. While there are pet theories in this, as in other sciences, there is a sufficiency of demonstrated facts to make it a perfect and exact science. To be a thorough chemist demands all of a man's time and all of his labor, so that we, as practicing dentists, cannot expect to be practical chemists; but we should know

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\* Reported by Mrs. J. M. Walker.

something of its teachings. Dentistry would be more perfect as a scientific profession if we were better chemists. Dr. Clement outlined briefly and simply the fundamental principles of chemistry; the theory of atomic weights; the derivative of the modern nomenclature, with its symbols, prefixes and terminations, so simple and yet so complete, relieving the memory of a herculean task, the apparently mysterious little syllables am, ous or ic, ate and it, etc., telling the whole story of composition and combination. As atoms make molecules, and molecules make elements, and elements make compounds, so the few letters and figures combined in the chemical symbol reveal the origin, nature, composition and proportions of the substance under consideration.

The results of the combination of the various elements are often seemingly contradictory, thus yellow sulfur and white quicksilver when combined form red vermillion, unlike either of its components in color, consistency, weight or properties, solid black charcoal and yellow sulfur unite to make a colorless fluid. Poisonous and offensive chlorin combined with the brilliant metal sodium forms that harmless culinary necessity common salt.

Though an exact science, chemistry is also an endless experimental science, through the peculiar range of chemical affinity. It is only through chemical affinity that we are able to utilize for our sustenance and use those natural elements most essential to our very existence. Phosphorous for the brain, iron for the blood, calcium for the bones, carbon, hydrogen, oxygen, would be locked up, unavailable for our necessities, except through the agencies of chemical affinity. All that we eat; all that we drink; all that we wear we owe to its transforming agencies. God has given to man the materials and the possibilities, and he must solve for himself the problem of their availability. It is this wise provision; this gap in actual knowledge, which has made man the king of creation in intellect and power.

So to-day, through the science of which we treat, man, as a reward for his labor, has found a remedy for almost every ill, an abundance of food, drink and raiment.

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The Secretary of the Mississippi Dental Society read a communication addressed to the Committee on Dental Literature, announcing the fourth edition of "Letters from a Mother, on the Care of Children's Teeth," by "Mrs. M. W. J.", a thoroughly revised edition, and to be issued in very attractive form. Since issued.

## IS THERE INCREASED FLOW OF BLOOD IN INFLAMMATION?

A writer in the ITEMS OF INTEREST on "Arsenic and the Dental Pulp," assumed that inflammation increases a flow of blood to the part affected. A foot note by the editor, controverts the doctrine in the following language: "The assumption, that in inflammation there is an increased flow of blood, is incorrect. There is a decreased flow, a clogging, a retention of the blood. This is what produces the swelling, and the pressure of the swelling produces the pain."

If the "assumption," that there is an increased flow of blood, be incorrect, and the "assertion" in the foot note that there is a decrease, is correct, will the editor of ITEMS explain the *true* physiological action that takes place, and tell how the part involved is *enlarged*? The admission that there is swelling, proves that it is enlarged—more blood in the part.

This enlargement must take place by the accretion of matter of some kind, and this matter, whatever it may be, can only be carried to the part by the blood. If physiology teaches anything different from this, it is as yet not widely promulgated, nor universally believed. So long as the circulation is normal in any tissue, or organ, or, in other words, so long as there is as much blood flowing away from as is carried to the part, so long will there be a normal condition of that part; but when the operation is reversed, then blood stasis may ensue and inflammation and its consequences result.

Galileo, though compelled to recant, still believed the world moved, and there are those who will still believe, and maintain, that in inflammation there must ever exist an increased flow of blood.

*W. H. H. Barker, Miller, South Dakota.*

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## QUESTIONS FOR ITEMS.

We receive many questions regarding second dentition, and from some of our best practitioners. Will the readers of ITEMS kindly answer the following:

No. 1.—Patient, young man of eighteen years; had deciduous cuspids in place till recently. They were firm, but somewhat decayed, and I removed them. Found roots one-half absorbed.

It is now three months since extraction, and the permanent cuspids show no signs of coming into place. I instructed patient

to irritate the gums by rubbing, pressing and pinching with his fingers, which he has done.

What more can be done to aid or induce the eruption of these teeth? I find lack of full eruption or retarded development in other parts of the mouth. It may be necessary to wear a plate with two teeth to preserve space. Does the pressure of plate sometimes induce eruption?

No. 2.—A lady, aged twenty-five and married, came to my office to have a lower wisdom tooth extracted, and, at the same time, asked me concerning her superior right canine, which was a temporary tooth. It had been filled with gold for some time. I extracted it to give the permanent tooth a chance to erupt, but six months later the gum had healed over as though permanent tooth had been removed.

Is the permanent canine likely to erupt? Is it possible she may never have one? The left permanent canine is, like all the other teeth, perfect, and the wisdom teeth have all erupted.

The front teeth are slightly separated, and there is sufficient room for canine to erupt. Will bridge a tooth in if satisfied permanent tooth will not erupt. Shall I wait longer?

No. 3.—Lady, twenty-two years of age; has two upper permanent cuspids in position of the two lateral incisors, and the two temporary cuspids are still in proper position. The lateral incisors have not erupted. Is it likely they will erupt? All are sound and in perfect line. Is it necessary to remove temporary cuspids and pull permanent ones to proper positions? If this is done, will incisors erupt?

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#### OPINIONS ON THE USE OF NITRATE OF SILVER, GATHERED FROM DISCUSSIONS REPORTED BY THE COSMOS.

Dr. Holmes has used nitrate of silver in his practice for forty years. He has found it almost an indispensable remedy, and has arrested decay with its use better than he had ever been able to previous to using it. He speaks of the application of it by means of a silver wire dipped into nitric acid and then inserted into the cavity. The action of the acid on the silver forms the nitrate, and the wire being easily directed, the application is made to the exact place desired. We used the crystals as much as thirty-five years ago to overcome hypersensitiveness. Sometimes it acted nicely, at other times it had but little effect.

Dr. S. B. Palmer has used nitrate of silver for a number of years. He thinks the effect is due to the silver. The most beneficial effects were observed in cases where crowns or bridges were set and the dentine had been dissolved from under the crowns and bands; by the introduction of nitrate of silver the destruction would be stopped.

Dr. F. W. Lee says he has found nitrate of silver effective in erosion. It hardens the enamel and stops the destruction.

Dr. G. W. Melotte has used it with great satisfaction. He thinks a nice vehicle to carry it to place a platina wire, which, being heated and touched to the stick of nitrate of silver, the latter would melt and adhere to the wire, by which it could be easily deposited just where desired.

Dr. C. T. Howard has used it for many years as an obtunder of sensitive dentine in places where the color would not be objectionable. He thinks the idea of putting it on the surface of gutta-percha fillings and zinc phosphates, and keeping it there to prevent decay is invaluable.

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#### “TRY.”

It is not an unusual occurrence for its manufacturer or agent to ask one to take a small quantity of a cement or amalgam to “try.”

It would appear that it was considered possible to fill one or two cavities with the material in question, and immediately pass a verdict on it.

How absurd!

Now, what is really necessary in order to thoroughly test such a filling material?

Two or more of the same class of cavities should be chosen in the same mouth, and the filling worked to different consistencies, for each. These fillings should be duplicated for several patients, in which the structure of the teeth vary and the attending conditions are different. Careful and complete records of each of these cases should be made for future reference. About a year later these operations should be carefully examined and compared to the records. Still a year later another examination should be made, upon which probably a correct idea of the value of the filling material can be reached and an intelligent report on the “try” can be returned.

*C. Edmund Kells, Jr.*

## TREATMENT OF THE DENTAL PULP.

*In Georgia Convention.*

Reported for ITEMS OF INTEREST by Mrs. J. M. Walker.

The common practice of placing on the floor of a cavity having a layer of diseased dentine over a nearly exposed pulp such a medicament as carbolic acid, creasote, one of the essential oils, or one of these mixed with oxid of zinc, is reprehensible. The design is to guard against future pulp trouble, while in reality this result is courted by this practice. The substances named are all penetrative, volatile irritants when confined. The strata of diseased or softened dentine is soon penetrated and the pulp reached. The medicament must then either pass through the tooth substance or be taken up and carried off by the pulp. The latter is too much to expect, and hence a struggle for life in this organ, which is sought to be preserved. The period and mastery in this struggle is determined by the quantity and the degree of irritating qualities of the medicament used, by the vitality of the pulp, and by the condition of the patient. But as the usual result the medicament will prove a destroyer. In contradistinction to this method of treating, in nearly exposed pulp, syringe the cavity thoroughly saturated with as hot water as can be borne; dry out with absorbents, and wash with bichlorid of mercury in weak solution; dry again with hot air, coat with varnish, and fill.

Dr. W. G. Browne thought the practice condemned by Dr. Catching was the very best practiced under the conditions described, and that the results produced were greatly exaggerated. The next best thing to do was to destroy the pulp and fill the root canals. It has to be done eventually, and as well first as last save all intermediate trouble.

Dr. H. H. Johnson took issue with the essayist, and did not believe that such applications were ever the cause of the death of the pulp. With or without them the pulp would die anyhow. Where the cavity is so deep as to merely expose the pulp, the disease of the dentine will progress to the pulp chamber. When the dentine is so softened the pulp is already *sick*, though perhaps not sufficiently so to give warning by pain.

Dr. Morgan spoke of foot-notes he had recently come across, made in his dental reading as far back as 1846-47, in which he expressed approbation of the method then suggested by Dr. Dwinelle, of leaving a portion of softened dentine in the bottom of a deep

cavity to avoid exposing a pulp. From that day to this he has adhered to this method. When this softened dentine is thoroughly dried out before a filling is inserted, there will be no more decay, for there can be no disintegration without moisture. When all moisture is shut out, as it will be if properly filled, decay must cease, though the dentine may crumble down. Dr. Morgan said he was surprised at the inconsistency of rejecting the agents named for fear of after effects, and yet recommending corrosive sublimate, the most persistent and most active agent known to us, and one which expands when confined. Carbolic acid is also persistent, but it is self-limited in its action unless a great superabundance is left in the cavity. Only sufficient must be left to unite with and form a coagulum. Dr. Morgan advocates the use of an agent which will cause the formation of a coagulum, preventing the continuance of decay and the decomposition of the semi-fluid contents of the tubuli. A coagulum is the very slowest of all animal tissues to decompose. Bacteria, or whatever you choose to call the agent, does not invade it. Cover the inner surface with a coagulum, and that is all you need. Iodin overcomes the odor of creasote when combined with it, and there is nothing superior for the treatment of pulpless teeth where there is persistent inflammation.

Dr. Cathing does not advocate leaving bichlorid of mercury in the cavity, but merely wiping it out. He advocates cleanliness and dryness.

Dr. S. W. Foster (Decatur, Ala.), asked Dr. Morgan what it is that causes the death of the pulp under a filling, if decay always ceased with the insertion of the filling. His own idea is that the original disease continues to progress and kills the pulp.

Dr. Morgan: It is caused by the pressure of the filling which proves a source of irritation. The pulp having been seriously diseased, the mere irritation of the operation of filling, in itself, may set up a chronic inflammation causing congestion of the pulp, the thickening of the membrane around the pulp arresting circulation and causing its death. The exposure of dentine by the old fogy use of the file in separations has often set up active inflammation resulting in the death of the pulp. The pulp never dies except as the result of a degree of inflammation sufficient to cut off the circulation. You will never find a suppurating pulp without an outside opening. Strangulation cuts it off, followed by decomposition, but there is no pus except from the outside. Suppuration is a physiological process and never occurs in dead bodies; the latter decompose, but there is no pus.

## CURRENT THOUGHTS.

### COCAIN.

Dr. Theo. Frick, of Zürich : I have been using cocaine very much during the last three years, but I know that very much has been said and written against it. I have injected from 3 to 5 centigrams and have never had any bad results as to the general effect on the patient. I do not keep my solution prepared beforehand, but get it ready just before I want to use it. It is not of much importance whether the solution is of 6, 8 or 10 per cent, but the quantity you inject, and I think 5 centigrams should be quite sufficient, except in cases of pericementitis. I know many greatly object to injections of cocaine, but I would recommend to colleagues at least to paint the gums with a camel's-hair brush at the margin of the tooth, especially when the cavity goes up above the gum, and the ligatures have to be pushed up; it can be done very easily if the gums are first painted in this way.

Dr. Jenkins : I think that any who have not used cocaine by injection should be cautioned against it. I always avoid giving it to a very nervous patient. It has a specific action which we ought to be very careful in producing, as some cannot bear it. It certainly has a very useful effect used externally. There are some with whom ether spray will answer very well, and some with whom a little encouragement will go a long way.

Dr. Roussy : I should like to mention a case which occurred last year. A patient came to me to have a tooth treated. I told her I should use cocaine at the time of inserting the tooth. I injected 1 centigram at 3 o'clock in the afternoon. She went home not feeling very well and was obliged to call in a doctor, who told her that had she had 3 centigrams it would have been her death. Perhaps you have heard of a doctor in Paris who says that in the use of cocaine much more water should be used. Since that time I have used cocaine without any trouble, but I put 5 centigrams for 2 centigrams; and the next day I make the operation with a new injection, of course; but I think we cannot be too careful, as it is a dangerous drug.

Dr. L. J. Mitchell, of London : As far as I can see, the best results have been by the combination of hydrochlorate of cocaine—3 parts, and 2 parts hydrate of chloral—a ten per cent solution for an injection, to which I add about a drop of oil of cinnamon.

*Dental Review.*

## REGULATING TEETH.

*Dr. J. N. Farrar, New York.*

The question to decide in a given case is, Which is the best plan, and if springs are to be used, how should the device be constructed? In other words, make it right in the first place. The main question of the present day is not so much to prove that teeth can be moved. We all know that they can, and that perfection can be obtained in almost all cases by proper skill. I think we all know, also, that many dentists think that they have this proper skill, when in reality they do not have it. They can move teeth, but they do not place them properly, because they lack in esthetics. There is such a thing as evening a set of teeth, and yet not correcting the facial deformity. Some of the worst deformities that we find are in cases where the teeth are already even. I had a case in consultation this morning in which both arches were beautiful when seen separately; but as the upper arch projected forward of the lower arch five-eighths of an inch, the face was hideous. There are also cases of irregularity of the line of the dental arch, which, if made even without extracting any of the teeth, would cause just such a result as this protruding case. I have seen cases that have been claimed by the operator as corrected, when they had only accomplished that end. Some dentists cannot understand why in any case a tooth should ever be extracted. Such dentists cannot make a uniform success in this branch. It is not so important to have a full quota of teeth as it is to have proper antagonism of the teeth. To come to facts, there are esthetic results, and there is such a thing as an unesthetic result. One is from the hands of exceedingly high art, and the other is evidence of no art at all—simply mechanical manipulation.

In our profession, as in all other esthetic professions, such as painting and sculpture, there are but few real artists—esthetic artists. How few men ever lived who have painted a picture or chiseled a statue that has been admired for hundreds of years! We can count them on our fingers and thumbs. Of course, in this I refer to master artists. In our profession we do not find so small a percentage of high esthetic taste and skill, but we do find great difference in dentists. In the makers of artificial dentures we find those who can arrange the teeth so that they will improve the facial expression and beautifully balance the contour of the face; so do we find those who can arrange teeth seemingly just as well as they, but when put into the mouth everybody knows that they are arti-

ficial. In either case, people want to know who made them, so that they can go to the one and steer clear of the other. It is so in the art of filling teeth. Some can excavate and trim a cavity so as to leave beautiful curved margins, making the form of the filling interesting to look on; while others cut the margins angular, thus causing unsightly fillings. One is artistic work, the other is not. Maynard excelled in the former.

In operations for the correction of irregularities of the teeth there is found in dentists the same difference in taste. I have seen representations of cases in plaster, brought before societies and held up as examples of perfection, that were far from perfect. I remember one, where formerly the upper arch was very irregular; the teeth had been evened, leaving them so that they did not antagonize properly with the lower; in fact, some of the upper side teeth were pushed entirely outside of and beyond the lower arch. Had one or two side teeth been extracted, and the arch shortened by moving the teeth anterior to them back, the operation would have proved to be perfect. I have seen cases where the upper cuspids had been moved so far outward to make space for arranging jumbled incisors in line, that when the patients smiled there must have been flatness of expression, with a deformity of face as great as before. Had a second bicuspid on each side been extracted, and the cuspids been moved back, the results would have been of the highest possibilities. I have seen a similar case in which the operator failing to even the front teeth after the cuspids had been moved too far outward, had subsequently extracted the first bicuspid, thus leaving a wide, conspicuous space behind each cuspid—two deformities instead of one.

The face should be studied well before undertaking to move any teeth. Of course, it is not expected that all people have the gift of seeing far a head, and at a glance see all the necessary steps to a perfect ending, but all can get good advice if they ask it.

In regard to the notions entertained by dentists about different plans and devices, it is the same in our profession as with farmers. One person is satisfied with old ways and old tools, and another prefers new ways and improved tools. It seems to me that the devices for the correction of irregularities of teeth should show the highest skill possible. Not necessarily the highest finish as to luster, because during the operation the little alterations that are necessary will injure fancy luster. The device should be made so as to do its work thoroughly, and not accumulate and retain débris among the teeth. I emphasize the latter, because some patients are

very untidy in their oral habits. I have had some irregularities that I have corrected, needing retaining devices to hold them in place. I have used roof-plates, and though explicit instructions were given that they should be cleansed after each meal, they would not clean them. I have had patients who, going to the country in summer, would return in the autumn with the plate looking as if it had never been removed from the mouth, and the lingual sides of the necks of the teeth showed injury. Though it was not my fault, it was mortifying to see such results. Now I seldom use plates in any form, for this reason. There is no word sufficiently strong to express the filthiness of the mouth of many. Sometimes our best efforts in the correction of irregularities for such people are censured by other dentists who do not know the circumstances, do not know that the fault belonged to the patient. Now and then there is a family who keep their teeth and their mouths tidy. A list of such patients is a joy to a dentist.

Sometimes a dentist will correct cases, and then the patient takes a trip to Europe, and when he returns the dentist finds that the teeth have become as irregular as ever. Parents then say, "Well! I won't have my daughter's teeth straightened; look at young Brown's teeth; he went through it, and spent hundreds of dollars for it; now his teeth are as crooked as ever." The dentist should always give such patients duplicate devices. Having put one in the mouth on leaving the pier, say, "Never take it out while on the ocean, because you may not be able to properly replace it. When you get on the other side of the ocean, do as you like. You must, however, clean it the best you can every day with a brush." Sea-sickness is a matter that we should guard against, and it is only the duplicate device that can insure safety for our results. If the first device is lost overboard, the other comes to the rescue. To correct teeth properly the second time is more difficult than the first. This is because of less firmness of the anchor teeth. I would not have it thought from this remark, however, that teeth cannot be corrected the second time. They can, but it generally requires greater skill than before.

*Cosmos.*

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THAT PAINLESS ANESTHETIC CRAZE.—Dentist (*to his little child*).—Ida, if you don't stop that noise I'll give you a good whipping.

Dentist's Daughter.—But then, papa, won't you please use that new painless anesthetic?

## HASSELL'S METHOD OF MOLDING.

1st. What changes are necessary in the plaster cast for a full upper set?

*Answer.* The palatal bone is the only portion of the upper jaw that never yields to pressure, whereas the alveola is liable to change, and in a majority of mouths, does to a greater or less extent. Unless provision is made to prevent it, the plate will rest on the palate and rock.

With a thin film of wax raise the surface from near the anterior ridge to near the posterior margin of plate.

2d. Are the vacuum cavities, so commonly used, necessary?

*Ans.* If the plate fits so that it comes in close contact with the membrane, there will be all the adhesion that is necessary, whatever the shape of the gums and palate.

3d. How should the model be shaped?

*Ans.* Flaring, so it will drop from the mold, as it will find its way out, and not mar the mold as is liable if lifted.

4th. When are "cores" needed, how made, and how used?

*Ans.* In a very small per cent of cases, the process is so prominent the model will not draw from the mold without removing a portion of the sand. The "core" is made by oiling the surface of the model as far as undercut; place on a slab, and apply one-third inch in thickness, equal parts of plaster and asbestos, the latter to prevent the core from shrinking and cracking and breaking in using if more dies are needed; dry thoroughly, and mold with the core in place; as it drops from the mold, replace and cast the die.

In partial lower sets, when needed, the core must be made in two sections; the first extending from the posterior corner, two-thirds across the model; when hard, jar loose and make the other section from the other corner, to meet the first, and proceed to mold, after drying, as in the upper case. The core can be dried rapidly over the gas burner.

5th. How should the molding sand be prepared?

*Ans.* Mixed with sweet oil to the same consistency as when water is used.

6th. What are the advantages and disadvantages of oiled sand?

*Ans.* It can be used many times without re-oiling; there is no danger of "blow-holes" in the die, as when water is used; can be packed hard, so as to make a better mold. It has no disadvantages.

7th. What are the qualities requisite for dental dies?

*Ans.* Non-shrinkage, hardness, toughness, smoothness, and melting at a low temperature.

8th. Why melting at a low temperature?

*Ans.* So that oiled sand can be used. Zinc is poured so hot the oil is burned, and much odor results.

9th. What alloy of metals has these qualities?

*Ans.* Babbitt metal.

10th. Are there different formulas for Babbitt metal, and what one is suitable for dental dies?

*Ans.* There are many formulas, and to cheapen it, lead is substituted for the tin, which ruins it for this purpose. The formula which has stood the test is—copper, 1 part; antimony, 2 parts; tin, 8 parts; melted in the order named.

11th. If it lacks fluidity when melted, or is brittle, what is the remedy?

*Ans.* Add more tin.

12th. What is used for a counter-die for Babbitt metal?

*Ans.* Lead, 5 lbs.; tin, 1 lb.

13th. Why cannot pure lead be used?

*Ans.* It melts at a higher temperature than Babbitt metal, and when poured on it, adheres.

14th. What precaution is necessary to further prevent adhesion?

*Ans.* Coat the die with whiting, and stir the lead till it cools somewhat.

15th. Is it necessary to put anything on the model before molding?

*Ans.* If the sand is freshly oiled, sometimes soapstone is necessary.

16th. What sort of molding rings are needed?

*Ans.* Made of boiler-iron, 5 inches in diameter; 3 inches high.

17th. How should the mold be made?

*Ans.* Place the model inside the molding ring; throw in the sand around the sides, placing the fingers on the model to prevent striking it, and pack with a potato-masher, using the handle; keep adding sand; no need of sifting, when packed hard; use the other end of the masher over the top of the model; fill even full.

18th. How should the model be removed from the mold?

*Ans.* Allowed to drop out, and if it holds, jar against the edge of the molding box.

19th. How should the die be arranged for casting the counter-die?

*Ans.* Sink it into the sand, nearly to the border-line of the plate, and place a small ring, or a Bailey flask, over it.

20th. Is there need of other metals for dies?

*Ans.* None.

21st. How many dies are needed?

*Ans.* In many cases one only, and when the second is required a second counter-die is not necessary.

*Ohio Journal.*

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## NITRATE OF SILVER IN DENTAL PRACTICE.

*By Dr. A. M. Holmes.*

Nitrate of silver is conceded to rank as one of the most efficient and reliable remedies in medicine and surgery, and when its merits are fully known it is believed that it will be found equally efficient in the treatment of a large class of diseases of teeth. Take for instance decay in temporary teeth; we all know from individual experience how trying it often is to fill the teeth of small children, in the ordinary way of making such operations; how they resist all efforts to excavate and fill sensitive cavities. By the use of nitrate of silver these operations are more easily made.

In proximal cavities in the posterior teeth, where the child is not nervous and timid, cut away the walls to a V-shape, prepare a piece of gutta-percha of the proper size to fill the space, soften it by heat, and cover the surface of the gutta-percha that is to come in contact with the part of the cavity with powdered crystals of nitrate of silver, and carry it to the place in the tooth prepared for its reception, packing it firmly, and leaving it there to be worn away by use in mastication. When that takes place, the surfaces of the teeth treated will be found black and hard, with no sensitiveness to the touch, or to change of temperature, and they will remain so indefinitely. If the child is so timid and fearful as to prevent this course, dry the cavity, take out such softened dentine as the patient will permit, carry the crystals on softened gutta-percha into the cavity, and pack it, leaving it to the time when it is desired to replace it with a more thorough operation. On removal of this filling, the dentine will usually be found hard, without sensitiveness, and needing but little excavation for the final filling.

I have treated diseased pulps with nitrate of silver crystals very frequently, since early in my practice, especially in temporary teeth, where devitalizing pulps with arsenious acid is unsafe,

applying the crystals direct to the exposed pulp, usually with relief to the patient.

Nitrate of silver is a resolute remedy; it cauterizes the surfaces of the soft tissues to which it is applied, but does not penetrate them as does carbolic acid, nor does it involve the entire pulp in an inflammatory condition, tending to destroy the whole mass, as does arsenious acid.

In extreme sensitiveness about the necks of the teeth at the margins of the gums, where the tendency is to softening of the tissues of the tooth, a condition very annoying to the patient and troublesome to the dentist, nitrate of silver has proved more successful with me than any other remedy, in checking the progress of the disease and relieving the patient. The salt may be applied directly to the sensitive part without pain to the patient. A good method that I have practiced, is to cover the parts after the nitrate is applied with a phosphate filling material of a cream-like consistency. That hardens and prevents the washing away of the remedy, and the surrounding parts from coming in contact with the salt.

Erosion, or wasting of the teeth, is checked by nitrate of silver more perfectly than by any other remedy I have ever used. The salt is applied to the affected parts, and covered with a phosphate filling to protect and retain it in place till it is firmly established in the dentine. Where the progress of the disease has gone so far as to require restoration by filling, this preliminary treatment is beneficial in preventing a further waste of the tooth substance, and consequent failure of the operation.

In superficial decay in soft teeth, where dark surfaces are not objectionable, nitrate of silver is beneficial. By removing the softened portion of the tooth, polishing the surface and rubbing the salt into the dentine, using a warm burnisher, and varnishing the parts to protect them and to hold the remedy till it is taken into the organic matter of the tooth, there will succeed a dense, hard surface, free from sensitiveness in mastication or change of temperature. In filling cavities in the class of teeth having an excess of organic matter, with which there is so much trouble from chemical or electro-chemical action between the walls of the cavity and the filling, an application of nitrate of silver will effectively prevent these unfavorable results. The remedy is taken up by the dentine penetrating the surface sufficiently to prevent any such action between filling and tooth.

This treatment will at times result in a darkish hue to the

walls of the cavity about the filling. This I explain to patients, that they may know that it results from the treatment, and that it is a proper and favorable condition for permanency of the operation. In crowns and bridges, where the dentine is uncovered, it is beneficial to use this remedy on the teeth and roots used to sustain the bridge or crown, as a protection against thermal change and decay. The use of nitrate of silver may be varied by applying the rubber-dam, using a strong solution of the salt, and evaporating the moisture by use of a hot air syringe. When used in this way, a solution of soda can be applied to the parts to neutralize any acid remaining. In the class of cavities extending so far beneath the soft tissues as to render the use of the rubber-dam or matrix impracticable, and a leakage from the surrounding tissues is liable to enter the cavity while introducing the filling and injure the permanency of the operation, cauterizing these tissues thoroughly with nitrate of silver will effectually prevent such a result.

After treatment of diseased pockets, and removal of the deposits from the roots of teeth, nitrate of silver has proved more successful in restoring a healthy condition of the parts than any other remedy that I have used in the treatment of pyorrhea. The finely pulverized crystals may be applied by a small spatula of wood or platinum, slightly dampening the end of the instrument and applying it to the salt. The crystals will adhere sufficiently to be easily placed in the space between the gum and the roots of the teeth. After the remedy has been left for a few moments in contact with the parts, it may be washed away with water, by the use of a syringe.

In the extirpation of pulps, where the canal is sensitive at or near the apex of the root, nitrate of silver crystals carried to the sensitive part and left there for a few hours usually relieve the trouble, and the canal can be filled without pain or danger of unfavorable results.

These are some of the many cases in which nitrate of silver crystals are advantageous in dental practice. It is a powerful agent. It acts promptly, with great uniformity, and leaves its track in darkened surfaces when applied to the teeth. This should be considered, and its employment governed accordingly.

*Practitioner.*

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#### TEETH FOR TAT.

*Stephano:* Trinculo, if you trouble him any more in his tale, by this hand I will supplant some of your teeth.—*Tempest.*

## DENTIST AND PATIENT.

" If you ever noticed, people who have the weak end of an argument always select a time to enter into debate when their opponents are at a disadvantage. Now, for instance, there is my dentist. He is a man of excellent principle, but he cannot quite reconcile himself to the theory of equality of the sexes.

" He is not one of the kind who has a degraded estimate of woman ; oh, no, so far to the contrary, he wants to mount her on a little pedestal in her own home, and there adore her. He thinks her province is strictly within the domestic circle, that she can do much towards ' influencing ' the masculine portion, but when it comes to mingling in the world of business or of politics, she is out of her sphere, and should leave such matters to the sex that is both physically and mentally qualified to cope with such affairs. We have had several discussions on the subject, but the time he likes best to talk with me about it is when I am in the dentist chair and he is engaged in the occupation of filling my teeth.

" It is then that the favorable moment appears to him for advancing this kind of conversation. So when the delightful (?) dental process is going on, and my mouth is wide open and filled with instruments, he commences on the subject, and, as he has it all his own way, with no interruption, save that of an occasional moan, he waxes eloquent and, of course, achieves a complete victory. He usually begins with the question : ' And do you really think the world will be much better when the women all vote ? ' An inarticulate answer, resembling no human vocalization, is all the response he needs to continue :

" ' Well, I don't know ; I very much doubt it, though I don't know as I should really object if I thought it would improve matters, but you see if women become politicians, they will lose all the power they now possess over the men ; and I believe that women are too sacred to be polluted as they would be by contact with grosser elements. A woman always loses that indescribable charm which makes her so lovely, when she places herself on the same footing with men. She is too sensitive, and it is not intended that she should witness such scenes as she would have to in mingling with the outside world. Then, again, what would become of the homes ? I believe firmly in home life, and how shall we have it if the women all go into business ? ' This is but a sample of the way he begins, and I sit there powerless to speak, and literally at his mercy, while he plies me with these unanswerable (?) questions."

## PATIENCE WITH PATIENTS.

Dr. A. Wetzel: Dentists can never be too patient. I have sometimes had nervous people whom I would have preferred to send away; in fact, have often been on the point of telling them to seek advice elsewhere, but after the lapse of several months have been glad that I restrained that inclination. If a patient goes to a dentist who is willing to humor them a little he gets a great deal of credit and they recommend him, they appreciate his work and frequently those persons whom they recommend are the best of patients, and we are able to do for them the very best work. A dentist must be patient himself, even though he may sometimes have impatient patients to deal with.

Dr. Schaffner: Dentists may be too positive, as in a case I had not long ago, the result of which was the loss of a patient. I had previously filled a tooth without my exactly remembering that it was sensitive. The tooth was not sensitive before, and as we have often observed it became so subsequently. I filled the root and applied cold or hot air, when the patient complained greatly of the sensation, but I told her that there could be no sensitiveness as the tooth was perfectly dead; the patient resented this idea so strongly that she ultimately left me, and in considering the matter, it occurred to me that it might have been perfectly rational and coming from the next tooth which I had previously filled. No doubt such cases occur to others besides myself and provoke us unnecessarily and to our own loss.

Dr. Jenkins: I think we ought to remember that a nervous pain, which is in one sense no pain, is a real one to the patient. Where the nerves are excited, the patient may attribute it to a wrong cause, but everything that we can possibly do to avoid giving suffering we should do; I have had my full share of such cases; people come to me sometimes because they think I treat them gently. We cannot see any reason for the pain, but where we see a reaction, we can find out and avoid little things which excite the nerves of our patient. Even sometimes when they are suffering from mere nervous excitement, if we can do something to calm their nerves by conforming to some condition which they think will relieve them, we should do so; we can then do what we like with them. I think the most troublesome patients are those who have little the matter with them but whose nerves are unstrung.

*Dental Review.*

## ITEMS.

If the needle of your hypodermic syringe is obstructed, and you have no wire fine enough to enter the point, have recourse to a section of braided picture wire; one of the fine strands from this is just the thing needed.

*Dr. W. S. Elliott.*

\* \* \*

Cobalt is again "the thing." It will have to be given another trial. Perhaps, as the "Cobalt of Herbst," it may answer better than it did twenty-five years ago, when most offices contained it.

*C. B. Plattenburg, Chicago.*

\* \* \*

**A SOLDER FOR ALUMINUM.**—The solder is an alloy of aluminum and tin, suitable proportions being 45 parts tin to 11 parts aluminum. The metals are melted separately, poured together, and then cast into slugs. No flux is required.

*R. Heaton, in Scientific American.*

\* \* \*

**EDITOR ITEMS:**—I would add to Dr. Haskell's questions on Artificial Teeth (July ITEMS, p. 408): Why is it that tooth makers persist in making the inner cusps of nearly all teeth entirely too long? This is especially true of the bicuspids. Also, why do they not make cuspids larger in proportion, to correspond with their almost universal relation in natural teeth?

*J. W. Greene, Trenton, Mo.*

\* \* \*

Dr. Ottolengui said not long ago that he believed he could fill a tooth with a broken pointed plunger, and has been criticized for even thinking of such a thing. In 1869 or thereabouts the dentists were all breaking off the points of their gold pluggers and putting in fillings with them, as it was supposed the perfect point had been found. Some fine fillings were undoubtedly made with them.

*C. B. Plattenburg.*

\* \* \*

Dr. Harvey W. Graham, who has been sick for some time, departed this life on July 24th, at 6:30 A. M., and was buried on the 26th, at his native place, Strongtown, Pa. He was a very promising young man, and was a half brother of Dr. William E. Hanna, who for a time was located at Johnstown, but is now living in Leadville, Col.

Do you use a spoon to mix plaster with? If so, just see how much more useful it will be if you place the bowl of the spoon on the anvil and flatten it out. It will take up dry plaster just as well, and will prove a very good spatula.

*Dr. W. S. Elliott, Sag Harbor, N. Y.*

\* \* \*

**EDITOR ITEMS:**—I would desire you to make a correction in the little communication I sent you, entitled "A Cheap and Efficient Substitute for the Flash Lamp." Instead of the words, "hydro-chloric acid," read dilute sulphuric acid.

*W. S. Elliott, Sag Harbor, N. Y.*

\* \* \*

Dr. Haskell says: "Gentlemen of the profession, why don't you *kick* about these small bicuspids and demand a change?"

Bless your soul, dear doctor, we have *kicked*, and the reply has been, "Some of the trade demand them." And, by the way, we have heard it *hinted* that Dr. Haskell was one of the number. But we are glad to know that he is not, as his vigorous protest abundantly proves. Hit them again, doctor, we will stand by you.

*Ira L. Andrews, Rockford, Ill.*

\* \* \*

**MAKE YOUR OFFICES ATTRACTIVE.**—Not in the sense of showy and gorgeous, but by giving to it the appearance of a restful, cozy sitting-room or parlor, rather than the severe aspect of an office, which fills one with fear. I labor to keep hidden, as much as possible, all of an office look, and I feel fully repaid when my ears are greeted with, "Oh, Doctor, how inviting your office is; why, indeed, it is not suggestive of an office at all, but rather of a parlor." It does not add materially to the expense, in this day of pretty inexpensive screens and numerous little articles, disposed of gracefully around a room, they give to it such a cozy, home-like air that one does not mind having to sit awhile. Compare the dental office of to-day with those of a quarter of a century ago. Now it is a careless dentist who will not have an attractive office, and keep it free from odors. There is no need of that "medicine smell" so many patients complain of. To the enterprising dentist there are always little things to make the office attractive, with cheerful daintiness of surroundings coupled, of course, with the gentle manipulations of the operation.

*An Admirer of ITEMS OF INTEREST.*

# INTERNATIONAL REVIEW.

By George Randorf.

## SHAKESPEARE ON TEETH.

Teeth being so important a part of human anatomy, they have not failed to serve in the masterly hand of that most consummate observer of human nature in the elucidation of some of their chief characteristics. Though the mention of the dental organs in his thirty-five plays out of thirty-seven, may be characterized as poetical allusions, yet the genius of Shakespeare has emphasized the importance of teeth in phonation as a weapon of attack and an organ of defense; as indicating age, and in those born with teeth as a sign of degeneracy. Of course, dentists will not go to Shakespeare for as rich a harvest of thoughts and descriptions of subjects in which physicians are more interested, but for historical reference, apt observations of the manifold relations of dental organs to human passions, and refreshing poetical diversions, the following excerpts from his plays deserve a place in our foremost dental magazine.

### WHEN TEETH WERE A SIGN OF DEGENERACY.

*King Henry*: Thy mother felt more than a mother's pain,  
And yet brought forth less than a mother's hope;  
To wit, an indigent deformed lump,  
Not like the fruit of such a goodly tree.  
Teeth hadst thou in thy head, when thou wast born,  
To signify, thou cam'st to bite the world.

*3. Henry VI, v, 6.*

### SHAKESPEARE'S PICTURE OF A DEGENERATE.

*Gloster*: I that have neither pity, love, nor fear.—  
Indeed, 'tis true that Henry told me of;  
As I have often heard my mother say,  
I came into the world with my legs forward :  
Had I not reason, think ye, to make haste,  
And seek their ruin that usurp'd our right?  
The midwife wonder'd; and the women cried,  
*O, Jesus bless us, he is born with teeth!*  
And so I was; which plainly signified—  
That I should snarl, and bite, and play the dog.  
Then since the heavens have shap'd my body so,  
Let hell make crook'd my mind to answer it.  
I have no brother, I am like no brother :  
And this word love, which gray beards call divine.  
Be resident in men like one another,  
And not in me; I am myself alone.

*—Ibid.*

That such degeneracy may be inherent in the family, and transmitted by heredity, did not escape Shakespeare's philosophical mind, as we gather from the following opinion on the successor of the earl of Gloster.

## A DEGENERATE'S GENERATION.

*Queen Margaret*: O, Buckingham, beware of yonder dog ;  
Look, when he fawn, he bites ; and, when he bites,  
His venom tooth will rankle to the death.

—*Richard III*; 2, 3.

*Queen Margaret*: That dog\* that has his teeth before his eyes,  
To worry lambs, and lap their gentle blood.

—*Ibid*; iv, 4.

## CARE AND PRESERVATION OF TEETH.

*Bastard*: Now your traveler,  
He and his tooth-pick at my worship's mess ;  
And when my knightly stomach is sufficed,  
Why then I suck my teeth and catechise  
My picket man of countries.

—*King John*, i.

*Coriolanus*: Bid them wash their faces,  
And keep their teeth clean.

—*Coriolanus*; ii, 3.

There is a matchless flash of Shakespearean admiration for sound, beautiful teeth in the following lines :

*Byron*: This is the flower that smiles on every one,  
To show his teeth as white as whale's bone :  
And consciences that will not die in debt,  
Pay him the due of honey-tongued Boyet.

—*Love's Labor Lost*; v, 2.

However useful a thing a tooth-pick may be, in its own sphere, yet it is powerless to prevent melancholy, which may be designated as a kind of spiritual tartar on the brain :

*Clown*: By my troth, I take my young lord to be a very melancholy man.

*Countess*: By what observance, I pray you ?

*Clown*: Why, he will look upon his boots, and sing ; mend the ruff, and sing ; ask questions, and sing ; pick his teeth, and sing.

—*All's Well that Ends Well*; iii, 2.

I notice that the author of that admirable booklet, "Letters from a Mother to a Mother," complains that men who "fall in love" pay very little attention to the dentistry of their future wives, the mothers of their offspring, and it is gratifying to find that she is sustained by at least one character in Shakespeare. The following is the sensible way to choose a "partner for life : "

\*Gloster.

*Speed* : She is not to be kissed fasting, in respect of her breath.

*Launce* : Well, that fault may be mended with a breakfast. Read on.

*Speed* : She has a sweet mouth.

*Launce* : That makes amends for her sour breath.

*Speed* : She has no teeth.

*Launce* : I care not for that neither, because I love crusts.

*Speed* : She is froward.\*

• *Launce* : Well ; the best is, she has no teeth to bite.

—*Two Gentlemen of Verona*; *iii, 1.*

We gain a glimpse into a diseased oral cavity and its relation to the external world from the subjoined smart discourse :

*Dick* : I have a suit unto your lordship.

*Cade* : Bet it a lordship, thou shalt have it for that word.

*Dick* : Only that the laws of England may come out of your mouth.

*John* : Mass, 'twill be sore law, then, for he was thrust in the mouth with a spear, and 'tis not whole yet. [Aside.]

*Smith* : Nay, John, it will be stinking law; for his breath stinks with eating toasted cheese. [Aside.]

*Cade* : I have thought about it; it shall be so. Away, burn all the records of the realm; my mouth shall be the Parliament of England.

*John* : Then we are like to have biting statutes, unless his teeth be pulled out. [Aside.]

#### TEETH SUGGESTED AS WEAPONS.

*Charles* : Rather with their teeth

The walls they'll tear down, than forsake the siege.

—*i. Henry VI*; *i, 2.*

A girl having been outraged, her hands and tongue chopped off, is thus taught by her Roman father to use the teeth as an instrument instead of her hands :

*Titus* : When thy poor heart beats with outrageous beating,

Thou canst not strike it thus to make it still,

Wound it with sighing, girl, kill it with groans;

Or get some little knife between thy teeth,

And just against thy heart make thou a hole;

That all the tears that thy poor eyes let fall,

May run into that sink, and soaking in,

Drown the lamenting fool in sea-salt tears.

—*Titus Andronicus*; *iii, 2.*

#### IMPORTANCE OF TEETH IN PHONATION.

*Antony* : When the best hint was given him, he not took't

Or did it from his teeth.†

—*Antony and Cleopatra*; *iii, 4.*

\* Curst.    † Through closed teeth.

*Suffolk* : Would curses kill, as doth Mandrake's groan,  
 I would invent as bitter-searching terms,  
 As crust, as harsh, and horrible to hear,  
 Deliver'd strongly through my fixed teeth,  
 With full as many signs of deadly hate,  
 As lean-faced envy in her loathsome cave.

—2. *Henry VI*; *iii, 2.*

TEETH, TOOTHACHE, LOVE, AND PHILOSOPHY.

That the degree of intensity of love was thought to depend on the presence or absence of the grinders in the mouth, is clear from this rare gem :

*Lafcen* : I'll love a maid the better, whilst I have a tooth in my head.

—*All's Well*; *ii, 3.*

The figurative use of teeth in sealing a secret is characteristic :

*Lucio* : No,—pardon ;—'tis a secret must be lock'd within the teeth and the lips.

We learn from Shakespeare that bad poetry may have a similar effect on the teeth as sour grapes, in setting them on edge :

*Hotspur* : . . . And that would set my teeth nothing on edge,  
 Nothing so much as mincing poetry ;  
 'Tis like the forced gait of a shuffling nag.

Love is commonly thought to be able to conquer almost everything, yet it is compelled to draw the line on toothache :

*Don Pedro* : There's no true drop of blood in him, to be truly touch'd with love ; if he be sad, he wants money.

*Benedict* : I have the toothache.

*D. Pedro* : Draw it.

*Bene.* : Hang it.

*Claud* : You must hang it first, and draw it afterwards.

*D. Pedro* : What ! sigh for the toothache ?

*Leonato* : Well, every one can master grief, but he that has it.

*D. Pedro* : Conclude, conclude, he is in love.

*Claud* : Nay, I know who loves him.

*D. Pedro* : I warrant one that knows him not.

*Claud* : Yes, and his ill condition ; and in despite of all dies for him.

*D. Pedro* : She shall be buried with her face upward.

*Bene.* : Yet is this no charm for the toothache.

—*Much Ado*; *iii, 2.*

There is at least one passage in Shakespeare's works which suggests the idea of personal experience as prompting the following reflexion. His early occupations requiring often change of places and prolonged travelings away from home, may account for the theory of some neglect of his denture. The question will then naturally arise : Did Shakespeare suffer from toothache ?

*Leonato* : I pray thee, peace : I will be flesh and blood ;  
 For there was never yet a philosopher  
 That could endure the toothache patiently ;  
 However they have writ the style of gods,  
 And made a pish at chance and suffrance.

—*Much Ado* ; v, 1.

Those young doctors who proceed to “cure” or “kill” a toothache, without bothering themselves much about *man or woman*, whom they hold as something extraneous to the subject-matter which alone seems to interest them, may gather some consolation that the gallows stops all such pains quite as effectually.

*Posthumus* (in prison) ; I am merrier to die, than thou art to live.

*Gaoler* : Indeed, sir, he that *sleeps* feels not the toothache.

—*Cymbeline* ; v, 4.

That *ordinary* sleep is often impossible when toothache is doing its work does not contradict the above suggestion, for the gaoler did not contemplate a *sleep* which is “Nature’s balm.”

*Iago* : I lay with Cassius lately ;  
 And, being troubled with a raging tooth,  
 I could not sleep.

—*Othello* ; iii, 3.

#### HUNGER’S TEETH.

*Cleon* : So sharp are hunger’s teeth, that man and wife  
 Draw lots, who first shall die to lengthen life.

—*Pericles*.

#### ENVY’S TEETH.

*Artenndorus* : My heart laments that virtue cannot live  
 Out of the teeth of emulation. \*

—*Julius Cæsar*.

#### SORROW’S TEETH.

*Bolingbroke* : O, no, the apprehension of the good,  
 Gives but the greater feeling to the worse :  
 Fell sorrow’s tooth doth never rankle more,  
 Than when it bites, but lanceth not the sore.

—*Richard III*.

#### WAR’S TEETH.

*Bastard* : O, now doth Death line his dead chaps with steel,  
 The swords of soldiers are his teeth, his fangs.

—*King John*.

#### TREASON’S TOOTH.

*Edgar* : Know, my name is lost  
 By treason’s tooth, bare-gnawn and canker-bit.  
 Yet am I noble, as the adversary  
 I come to cope withal.

—*King Lear*.

\* Envy.

## EDITORIAL.

### THE CAUSES OF GOOD AND OF BAD TEETH.

After all has been said and done, this subject of good and of bad teeth is still somewhat mixed. We learnedly dwell on something we know; and quite as profoundly discuss something we do not know. We are learning; but have not come to a knowledge of the truth, the whole truth, and nothing but the truth.

For instance, we find good teeth in the mouths of chronic invalids, in spite of the theory that, "of course, general debility and chronic diseases aggravate caries;" and we find poor teeth affecting the healthy. Many who are delicate and hypersensitive, "who are almost sure to have poor teeth," sometimes come to us with teeth beautiful, regular and pearly white, sound and laughing; while decay runs riot in the mouths of many hard fisted, biliary tempered, sturdy yeomen. A shriveled-up, puny, dilapidated specimen of humanity visits us in company with a fine, muscular, well-proportioned companion, and we instinctively say the latter had good teeth and the former poor teeth, or none at all. But on examination, we have to reverse our statement.

And it does not altogether depend on the care taken of them. Some scour their teeth so persistently their teeth show the ridges of the brush, and as persistently they are obliged to have their teeth filled; yet, at forty, they are using artificial teeth. Others who hardly know the use of a brush, enter old age with their natural teeth.

Some ascribe the decay of the teeth to their sedentary habits, the character of their food, malarious climate, and some diseases they have had; others, with the same indoor labors, food and climate, smile with beautiful teeth. Thus, often, in spite of their abuse and misuse, and in spite of unfavorable environment, some teeth continue strong, and others with good care degenerate, though under favorable surroundings and the best of treatment.

We once asked a judge of seventy years, who had good teeth, how he had managed to keep them so admirably.

"Well," said he, "I have been to a dentist but twice in my life. The first time there was little done but filing them apart, for they were very crowded. Nearly all the front teeth and the bicuspids had shallow decay on their proximate sides, which the filings obliterated. A shoulder was left at the neck to prevent their approaching each other. He gave me the separating file, and I have used it for ten years to keep the proximal sides of my teeth sound and polished. You can see the effects now of his and my filing by the shape of my teeth; but I assure you this practice has prevented decay from that day to this, except on the grinding surface of my back teeth, which were filled with amalgam thirty years ago, and have never since given me trouble."

So much for this man's experience; others are confident the file should never be used.

But we have the cause of bad teeth now. "My great-grandfather had good teeth, and his children had good teeth," says an old gentleman. "They were of slender English build. My grandfather married a short, stout German woman, of quite a different build and temperament from himself, and this has given his descendants irregular and crowded teeth which has caused much decay." "Yes, that looks reasonable. But how is it with his sister, who married into the same family?" "Her children do not complain of bad teeth." Said a Frenchman, "All the branches on my great-grandfather's side, but one, had good teeth. This one, my father, married an American lady, intellectual, sensitive and small boned. Both were healthy, and it seems to me their children should have good teeth. But they have not, though all the rest of her family and all on my side have."

So we might go on, only to be puzzled at our own story. Opposites and contradictions and inconsistencies kiss each other, and harmonies dwell together in discord. O, yes, many of these things can be accounted for; but, while we are explaining one, two appear to confound our theories. Let us not profess too great profundity.

## INDEPENDENT THINKING.

We should make more progress if we did more independent thinking and planning and acting. There are only a few who are so free from the fetters of the powers in church and State, in science and philosophy, in research and invention, that they are able to travel out of the deep popular groove. With many of us it is worse than that; these fetters are not only chains on our hands and feet, which may be knocked off, but the iron ribs are woven into the very coat on our back, and we are so used to wearing it, that, like the corseled girl, we can hardly do without it; and, if we really do throw it off, it seems as though we should fall all to pieces. They seem to help to hold us up, and keep us straight and respectable, and to make us like other people. Worse than that, we may be ridiculed as cranks and heretics, and even be called crazy or imbecile. This is not pleasant, and it may be so unpleasant that we shrink from it.

Oh for a little independence—at least, enough to assist our individuality. To see ourselves without being obliged to look through others' spectacles would be a great privilege. But the trouble is, as soon as we shut ourselves up to our own thoughts, to work out our own problems in our own way, in comes public opinion to disturb us. It pushes itself in on us though it has to break down our door to get in. And there it sits, with glaring eyes fastened on us, daring us to break away from tyrant custom.

Ah, we little know we are slaves till we try to be free. We little know the strength of our fetters till we try to break them. Talking about being and doing as we like, and believing what we conceive to be the truth: This is all well enough for those who believe and do and are like those about them. But let a man step out of the beaten path, and how quickly he needs the strength and courage of a Spartan; and many of us are not made of that kind of stuff. We have too much dough in us that needs baking, too much "hay wood and stubble" that needs burning, too much dross that needs the severe fire of the furnace to purify and refine us.

Talk is cheap, purposes are easily made; even a house is easily

made—on paper. But only when we put our very life in what we say, it has power. Though your ideal be something different than others have accomplished, work it out; it may make the world better. Perhaps this is the purpose for which you were created.

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### RESULTS MOST DESIRABLE.

Immediate results are pleasant, but not always the best. They stimulate ambition and quicken our steps, but sometimes make us satisfied with small things.

In our childhood, at school we were taught to be thorough with each day's lessons, whether we saw the use of them or not. We were thus led on step by step, we hardly knew how, or why, or whether. But there was one who knew, and who was planning our whole course. Sometimes when we thought we were ready to leave school, he showed us we had many lessons to learn. Sometimes difficult lessons discouraged us, but he saw these were the means of our attaining strength and development. So as we were taken up, step by step, and from grade to grade, the lessons were made harder, the discipline more severe, and the mysteries of knowledge became more intricate. And with these the importance of thoroughness increased; and in the midst of these, and by their effect, we grew and matured, and became more completely master of our tasks and of ourselves.

In like manner, it is not so much the present wages a young man may be earning that should content him, but a conviction that the character of his work is preparing him for the great future of his life.

We are each sent into this world for a purpose, to occupy some special sphere for our own and for the world's advancement, and the earlier a young man finds out what he is made for, the better. Though he may not be able to see clearly what this is, his very instincts, if he is faithful, will help him prepare the foundation for it. His present work may have no market value, everything he does may appear provokingly futile, nothing prospering, and

many results, the opposite of what he would have them, till he feels like writing on everything he has done, *Failure! failure! failure!* But if he has increased knowledge, digested wisdom, and acquired skill; if he has strengthened his character, broadened his capacity, and better fitted himself to do and endure; if, by his failures, discouragements, and oppositions in his strivings for something unattained, and perhaps unseen, he is worth more intrinsically and has become stalwart in spirit, mind, and body, his experiences have not been in vain; they have done much toward making him a success; there is but a step to it when these are attained.

Thus there must be separation and refining, which sometimes means the fire of the furnace; there must be humiliation and sacrifice, which often means isolation and neglect. These, with many blunderings and stumbling, will be ours before we come to an honorable and successful position in life. These, and the right use of them, are the results most desirable, and they are well worth the cost.

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#### THE FOLLOWING LETTER TO A YOUNG MAN MAY BE OF SERVICE TO SOME ONE.

Young man, that is not the way to succeed. Instead of standing and whining around, complaining you are the slave of your office and the victim of competition and low prices, that you are neglected by the public while the undeserving succeed, and all that nonsense; wake up, spruce up, and keep up with the most skilful. Deserve success, and you will have it.

Why don't you do as Jim does? He started two years after you did, and already he is out of sight in advance of you. You don't hear him whining and growling about others; he gets out of their way by getting ahead of them. He does not complain of prevailing prices; he gets so far above them by doing good work that he establishes his own prices. People are not so easily fooled as you think they are. The most desirable are after the best work and expect to pay the best prices for it.

Jim has enterprise, you have not; he has a clean, cheerful,

pleasant office, you have not ; he has a refined, professional, intelligent appearance, you have not. He keeps up with the skill of the foremost of the profession. Do you? His soul is in his business. Is yours? He is a leader in every good thing. Are you?

What is a drudgery to you, is a pleasure to him ; the patients you avoid as "too all-fired bothersome and exacting," he welcomes as a trial of his patience and temper ; the work you avoid as too difficult, vexatious and tedious, he covets to sharpen his wits and skill, and to show his ability.

No use trying! No show! Nothing in dentistry any way! Perhaps not for you. Perhaps you do not belong there. Many a man has mistaken his calling, and some men have mistaken their opportunity ; it passes while they sleep. You never hear Jim say there is no show. He takes his show along with him, and has more show than a dozen lazy spendthrifts who waste all their time trying to find fun. You don't hear his patients Jewing down his prices, they actually clamor for his time. Why don't they crowd you so? They will crowd you out of the profession, unless you do a little crowding yourself.

You don't thank me for my impertinence? Well, we know we are seldom thanked for waking up a sluggard. The only reply we generally get is : "A little more sleep ; a little more slumber ; a little more folding of the hands to sleep." So shall thy poverty come as a robber, and thy want as an armed man. Go on in your laxity, if you will, but let there be no more whining.

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Well-directed energy, after all, is the main element of success. We may regret genius and shrewdness, talent and tact, education and position, friends and influence—but with energy we may remove tremendous obstructions, lay solid foundations and build a house that the gates of vicissitudes shall not destroy. Few vocations are surrounded with such difficulties, and require talents so lofty, that push cannot overcome. Without talent to devise and money to supply the sinews of war we may have to plod along to a disadvantage ; but with indomitable energy we'll get there.

We'll not mind the mud or the hills, the rain or the darkness—not even the hunger and the weariness—if we can only get there, and with intelligent, constant and consuming push we will get there. It's all well enough to have kid gloves and a silk hat, dandy clothes and an esthetic air, dignity and self-esteem, but if these can't stand the weather, we must push on without them. They will hardly do while we have rubbish to clear away, and our own road to make through a rugged country. They'd spoil, and spoil us. Pull off your coat and roll up your sleeves, and sail in. Get there! get there!! That's the main thing.

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#### WASTE, AS MATERIAL FOR SUCCESS.

Much we do is waste. On many things we spend money, time and labor, patience, vexation and strength, to throw away as useless. Yet the effort has not been in vain. It is in making failures we make success. If, because our first effort is a failure, we make no second effort, we should not succeed in anything. Woe to that man who is discouraged at his failures; he will be soon kicked aside as the greatest failure of his failures.

It is unreasonable to expect immediate success in important things, for in nearly every pursuit skill, wisdom and tact must come from repeating over and over again the same thing. The first and the second and the third, and many times, that same thing must be destroyed, to build the same thing improved on its ruins. Thus the man of success is the man of failures. It is on his monuments of failures he jumps up to see his success beyond.

Even our successes should not satisfy us; for if we have laudable ambition, what is now success will, as we pass on to greater things, be our laughing stock.

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The difference between men who accomplish astonishing tasks and those who do nothing, is that one uses the time at his command, while the other wastes it; one husbands his resources, while the other dissipates them; one is aggressive, the other neutral.

## NOTES.

The union of energy and wisdom makes the completest character and the most powerful life.

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As soon as an oxyphosphate filling is set, and before it gets wet, rub over it with a hot burnisher a thin layer of hot paraffin.

\* \* \*

Dr. J. I. Wells, of Webb City, Mo., was badly hurt recently by the blowing out of his vulcanizer. The mercury of his thermometer was divided, so that he could not judge accurately the pressure and heat.

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Dr. Caracatsanis, of Athens, says that phenic acid applied to the skin will so benumb it as to make the insertion of the hypodermic needle comparatively painless. We would suggest that a little cocaine in solution be added.

\* \* \*

Dr. A. Bleichsteiner, of Gratz, Austria, says that with three per cent solution of cocaine there can be no toxic effect. From a three to five per cent solution is preferable for local anesthesia. If the solution is made in alcohol, it is better than by water.

\* \* \*

Dr. Wm. Williams, of Oslstry, England, sends us clippings showing that dentists in England, as well as in America, have trouble with their patients. Here are three cases of prosecution for malpractice in extracting, and each dentist is adjudged guilty, and fined heavily.

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Dr. Cravens makes a saturated solution of cocaine in chloroform. The cocaine is first rubbed very fine in a mortar, and then dissolved to saturation in a half ounce of chloroform. In pyorrhea alveolaris he injects with a syringe deeply into the pockets the solution of cocaine, after which the gum is thoroughly washed with hot water. After three, or, at the outside, four applications, sensibility entirely ceases. Whisky or alcohol will entirely dispel the numbness of cocaine, in from one to two minutes, by washing the mouth with either. We should judge this to be admirable treatment.

## FOR OUR PATIENTS.

O to be something ; yes, something

Well worthy of being a man ;

Ready and strong for some service

Assigned me in life's mighty plan.

O to be ready for action,

Well fitted for what we should do ;

Waiting, perhaps, but all ready,

With head, heart and pulse beating true.

O to be faithful, undaunted,

Courageous, though standing alone ;

Firm as a rock, and unflinching,

Fighting, though counting but one.

O to have faith in our triumph,—

To see glorious victory won,

While we are struggling and fighting,

Though beaten, and nothing be done.

O to see God in our struggles—

Our God, strong to help, by our side—

Guiding, inspiring, and strengthening,

Assuring, "With thee I abide."

O to be able, when dying,

To say we have done what we could,

And that we have in our weakness

Done work that shall tell for our good.

T. B. W.



## THE TEETH OF FISHES.

The jaws of most fishes are toothless, though nearly all have teeth growing out of the tough mucous membrane covering the jaw. Some have no teeth even here, but in others they number, either in the jaw or its appendages, from a single tooth to so many they are countless. They are of great variety in structure, shape, and size. The most numerous are simply sharp, slender dermoid appendages of the mucous membrane, answering somewhat to the structure of the scales of their skin. In some species they are so numerous and so closely aggregated as to resemble the plush or pile of velvet,—all of the teeth of the perch are of this kind. There are no fish that chew their food or that have teeth for any purposes of mastication. The nearest any species come to this are those which crush shells

to extract the meat. The teeth are almost invariably for offense or defense, and to seize their prey and to prevent its escape from the mouth. For these purposes the teeth are either ankylosed (set solidly in the jaw without a socket) or so hinged in the mucous membrane of the mouth (not entering the bone), as to easily fall backward in the act of sucking in its prey so that it cannot extricate itself after it is seized. As it passes, the teeth spring back to an upright position. These teeth are used with terrible effect in warfare.

As a rule, the less the number of teeth, the larger, stronger and more formidable they are; and in many fishes having a large number of teeth, some are much larger than others. In some, they spring up as thick and tiny as scales in all parts of the mouth, lips, and pharynx.

Where we find large, strong teeth in fishes they are generally ankylosed in the jaw and the dentine is covered with enamel, but in others they are usually simple dermoid appendages to the mucous membrane. The wolf-fish is a prominent species of strong teeth. It lives on shell-fish, and its teeth are so formidable that it easily crushes the hardest shells. The terrible and gigantic spatula of the saw-fish, is a modification of a tooth, with a large number of teeth growing out of each side in the shape of socketed spines, having persistent pulps. In the attacks of this fish it rushes on its antagonist with such impetuosity as to send this shaft quite through its body. It will in this way crush in the sides of a boat, and it has been known to so shatter the bottom of a vessel as to sink it.

The teeth of skates or rays are very blunt and closely set, forming a continuous pavement. Very hard shells and other substances are crushed by them.

The teeth of sharks are in all the rounded working surface of the jaws, arranged in many parallel concentric rows. The teeth situated on the edge or exposed border of the jaw, are usually erect, while the rows behind them point backward, and are variably recumbent. In the great tropical white shark, the teeth lying on the border of the jaw are erect, and all the successive rows, which are many, point backward. In many of the dog-fish shark the inner surface of the jaws forms an evenly rounded surface, along which the rows of the teeth are found in regular rows. They vary in their incline toward the throat from the innermost part of the jaw, to those fully erect on its exposed borders. Only a few of the most forward rows are exposed, a fold or flap of mucous membrane covering in those teeth which are not fully calcified and firmly attached

to the gum, though nearly all these, when pressed by the prey in its struggle to escape from the mouth, are forced erect, and form an effectual barrier of escape. In the Lamna shark, the teeth are arranged round the jaws in concentric rows with great regularity, the teeth of the inner rows gradually coming forward to the position of the older rows in front. This is accomplished by the mucous membrane in which they are set, itself growing forward, sliding bodily over the inner face of the jaw, and outward over its border, beyond which (in the lips) they loosen and fall out. It is thus easy to account for so many teeth of sharks which are found. None of the shark's teeth are rooted in the jaw, or have any direct connection with it. The basking shark, in addition to its teeth, has numerous comb-like appendages, about five inches long, on its bronchial arches, made of osteo-dentine, which apparently perform the same function as the whalebone in the whalebone whale, in straining the water of small fish and other food.

The teeth of the pike vary greatly in its various species. In some, the teeth are crowded on all parts of the net work of the mouth, lips, and pharynx. In the common pike, the surface is fairly crowded with sharply-pointed teeth, having an inclination backward. In some parts of the mouth they are comparatively large. The lower jaw is armed with teeth of formidable size and strength, and as sharp as a spear. The smaller teeth are in front, where they are arranged in several rows, the largest near the middle of the side of the jaw. When it has seized a fish, it often holds it across its mouth, piercing and retaining it by these largest teeth. After holding it thus for a time to maim it and lessen its power of escape, it swallows it, head foremost. The tenacity of the pike's hold is illustrated by the manner it frequently takes "a bite." Though it bites the hook firmly, yet when the angler strikes or jerks the line to penetrate the hook into the jaw, he finds it is only held by the fish's teeth, and though it may allow itself to be drawn almost out of the water, he lets go at his pleasure. The margin of the upper jaw is not bordered by teeth, as with some other fish, except in front, where the inter-maxillary bones carry a few very small teeth. In the roof of the mouth are three wide parallel bands of teeth, those in the medium band being directed backward, those of the lateral bands backward and forward. The marginal teeth are firmly ankylosed, but the teeth on the palate are all hinged in the muscle in such a manner that they can bend only backward.

T. B. Welch.

## NOTICES.

The Colorado Dental Association held its session in June. There was a full attendance.

Dr. Hartung offered a resolution that the Association should not use or encourage the use of patent nostrums. It provoked a lively discussion and was finally voted down.

Dr. Cunard's able paper, "Principles of Practice," read on the preceding day, was generally discussed and its main positions heartily approved.

"Neuralgia of the First and Second Divisions of the Fifth Pair of Nerves," was treated in a competent manner by Dr. E. S. McWhorter of Central City.

The annual election resulted in the choice of the following:

Dr. P. T. Smith, Denver, President; Dr. W. S. Brenneman, Leadville, First Vice-President; Dr. W. K. Linton, Colorado Springs, Second Vice-President; Dr. A. H. Luevins, Denver, Recording Secretary; Dr. S. M. Townsend, Denver, Corresponding Secretary; Dr. W. M. Smedley, Denver, Treasurer.

These committees were named:

Executive—Drs. Fynn, Harlen, and Watson.

Membership.—Drs. Weisser, Conrad, and Guyer.

Publication.—Drs. Gilbert, Flint and La Moile.

On motion of President Smith, Dr. M. A. Bartleson, of Denver was unanimously chosen Delegate to the World's Dental Congress, which meets at Chicago on August 14th.

Dr. Geddes, of London, England, was elected to honorary and Dr. McWhorter, of Central City, to active membership.

It was decided to hold the next annual convention at Glenwood Springs.

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The officers of the Mississippi Dental Association are: Dr. James B. Aeken, Vicksburg, President; Dr. George W. Rembert, Natchez, First Vice-President; Dr. J. O. Frilick, Meridian, Second Vice-President; Dr. W. C. Stewart, Fayette, Third Vice-President; Dr. J. D. Killian, Greenville, Corresponding Secretary; Dr. T. C. West, Natchez, Recording Secretary; Dr. C. C. Crowder, Kosciusko, Treasurer.